

SUPER CHEVY SUNDAY!

November 1988

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Radio Control **CAR ACTION**

THE WORLD'S PREMIER R/C CAR MAGAZINE



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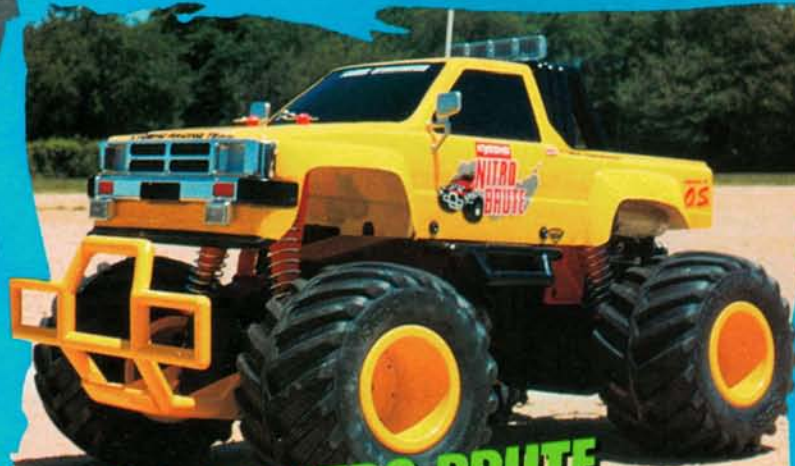
MEGA!

**Airbrushing
ABS Bodies**

RC10 TECH

MOTORS:
Hand vs.
Machine-Wound

**Budget
BOOMERANG**



SAVAGE NITRO BRUTE



**RC10 Truck
CONVERSION**



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ON THE COVER: Top: The Lava Machine fires up for the Super Chevy Sunday weenie roast; just below, the Budget Boomerang clears the RCCA logo. Center: Crowd-pleasing 1/4-scale Supermodifieds rounding the first turn at the West Coast 1/4-scale Nats, in El Cajon, CA. Kyosho's latest monster mud-slinger, the Nitro Brute, a la alcohol! Bottom: A sneak peak at our next issue: our second annual off-road special—the Car Action New England Championships. Photo by Walter Sidas.

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EDITORIAL

by CHRIS CHIANELLI



ASI WRITE THIS, the entire R/C on-road racing industry is preparing for the second annual Lake Whippoorwill Car Action Weekend in Orlando, FL. Last year, there were 180 entries, and, as you probably know, since then, the availability of $1/10$ -scale road machines, speed controllers, motors and whatever can be used in high-bank super-speedway racing has increased tenfold. The Lake Whippoorwill event is probably the largest of the year. All the race-conscious manufacturers and top trigger-fingers will be there.

This issue brings you a timely look at a car that so far appears to have incredible on-road potential; so much so that copies of the design may appear soon. The car to which I refer is C&M's $1/10$ -scale Cobra, reviewed here by Von Eric. We also have a motor armature expose: We take a close look at the *inside*, which in some cases is not as pretty as the outside.

Next month, you'll see our second annual off-road issue. Off-road thunder will strike once again, and we've also included the most daring shootout of the year: The Schumacher Cat, The Turbo Optima SE and the Tamiya Avante will do battle. We've been trying to get a C4 from RPS but haven't yet received it. We've heard that there will be an availability problem in the future, but this is, as yet, unconfirmed. Of course, we'll bring you many other off-road articles, e.g., the budget 4WD shootout. You'll just have to wait and see what *that* one features. Too bad!

The Ayatollah of Radio Controlla commands, "You must always use full throttle!"

Radio Control CAR ACTION

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Letters



WHERE TO WRITE TO US

If you're writing to the editors (and we'd love to hear from you), please be sure to address your letters to: *Radio Control Car Action*, 251 Danbury Road, Wilton, CT 06897. Only subscription orders and inquiries are handled by our Customer Service Department in Mount Morris, Illinois; other mail addressed there must be forwarded to Connecticut, which leads to long delays.

Hey...Do the Right Thing

I wanted to modify my Turbo Optima, so I went to my hobby dealer for advice. Everyone there seemed to ignore me and acted very snobbish and rude. I also went to other hobby shops, but they just wanted to suck the money right out of my pockets instead of helping me with my favorite hobby.

Would you *please* do an article on how to modify a Turbo Optima? I would really appreciate it.

Thanks a billion! OSCAR LOI
Brooklyn, NY

Oscar, Oscar, Oscar. We're going to do an article just for you. Next month we're going to show you how to drastically reduce friction with the new belt-drive system that will work on all the rear-motor Optima spin-offs (Javalin, Salute, Turbo Optima). We'll also throw in a few added tips.

Oscar, it seems like your home town might be a great locale for a friendly hobby store to set up shop. I guess the guys who ignored you forgot it's people like you who put the butter on the table.

CC

Stock Timing!?

Many people wrote in answer to Mr. Provetti's letter on stock motors.

My letter is in response to Mr. Provetti's letter in the September '88 issue concerning stock motors. I think he's abso-

lutely right. When I saw the ROAR stock rules for the first time, I thought the motors were to be almost exactly the same. When I raced stock the first time, I found out that wasn't the case. I raced a Twister Ultrastock 2WD with stock brushes, but I still got blown away by a few hardcore racers. Why? I asked around and found out they had the very newest Reedys, Twisters and, yes, Trinityts with the heat-sink end bells, wet magnets and timed brushes. As "Uncle Ernie" says, it's just not fair. I don't have access to these hot stock motors, so it takes a good deal of the fun away.

I think the brushes and other go-fast stuff has to go. Stock should be a test of drivers and chassis setups!

MARSHALL SKARE
Hudson, WI



CHOOSE YOUR WEAPON

You've dared to take the R/C challenge. Your mission is clear: Load your hottest car with high-powered Pro-Line tires.

Hit the trigger.

Now hold tight and watch the

fun go off.

See Pro-Line tires blast through racing's roughest battlefields; dirt, sand, asphalt, faster than a speeding you-know-what.

Their outer shell casing is

strong and tough, for dead-on durability.

And Pro-Line tires come in a range of styles, sizes, widths and tread patterns, each born to blow the other guy's doors off.

Your mag is awesome. I love the in-depth track reports and articles, but the main reason for my letter is to express some of my opinions.

The first matter is Mr. Provetti's letter. His letter was great; we should try to put some restrictions on timing, and control stock racing a bit more.

In regards to Ellis Ann Rodgers' letter (about not letting her son buy McAllister products): lighten up! It's only a drawing.

MATT HAIDUK
Suburban, IL

In response to Ernest Provetti's letter: I agree with him 100 percent. Something has to be done.

Keep up the great work, and thanks for a great magazine!

DAVID MARCH
Pryor, OK

It's a Wonderful Day at the Neighborhood Beach

Here's a representative sample of the many letters we received in response to Mrs. Rodgers, who objected to the McAllister "Body-Building" ad.

I've been buying your mag for about a year and a half now and I love it. You definitely bury all the other R/C car magazines!

I just got your September issue, and as I flipped through it, I came to the letter labeled "Offensive?" When I finished the letter and looked at the McAllister ad printed above it, I almost fell out of my chair laughing. I looked at the name under the letter, (Ellis Ann Rodgers) and wondered... Rodgers, huh? Maybe she's related to Mr. Rogers?

Well, Mrs. Rodgers, you'd better never, ever take your 13-year-old son

and his friends to the beach, because you might see a girl in a swimsuit! Boy, wouldn't that be a kicker? I totally agree with Chris: There are a lot worse things to get upset about than a girl in a bathing suit. Some people really crack me up.

PAUL STEINPORT
Grand Rapids, MI

I saw one on a poster in a window of my local supermarket advertising a new diet pill. My doctor's got a picture of one in her office showing muscles and their names. So why can't McAllister have a girl in a bikini?

What about the great works of art like the Venus De Milo? Is Mrs. Rodgers going to deprive her son of art history because she thinks it's offensive? The human body is nothing to be ashamed

(Continued on page 10)



Likewise, Pro-Line accessories, from wheels to bumpers to bodies, have what it takes to zero in on the finish line.

So set your sights on surefire fun. Aim for your local Pro-Line dealer. Or shoot us a call for

more information. For our current catalog, send a check or money order for \$2.00 (U.S. Currency). If you would like more information on Pro-Line products designed to fit your favorite R/C car, include the make and model.

Pro-Line, P.O. Box 456,
Beaumont, CA 92223,
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MERCURY Xi-4 4WD



Designed for competition! RS-540 motor! Low profile pin spike tires! Independent double wishbone suspension! Unique 3 differential / 2 belt drive system! Independent adjustable shocks! Monocoupe frame!

Mercury Xi-4 4WD - 10102

ROCKBUSTER R/C CARS



Original Version - 1/10 scale designed for the entry level driver. Features a RS-380 motor, rear differential, soft rubber tires, 3 speed forward/3 speed reverse speed controller. Requires a 2 channel radio, and a hump battery pack to run (not included).

KIT - 21331 85% Assembled - 21343
Optional Heavy Duty Suspension - 21713



Hopped-Up Version - Same basic design as Original Rockbuster but comes with a RS-540 motor, new suspension, bigger tires and hubs. Designed for competition.

KIT - 21772 85% Assembled - 21719

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Mo. HQ-325 DC-DC Quick Charger • w/Auto Shut-Off • 12V DC 6 amp Power Source • Pulse Current Adjust - 1-4 amps • 26.5 x 33.5 x 15.5 mm - only 64g!

Peak Detection Charger - 11625

Call for a complete parts list for Rockbuster cars.
Dealer inquiries invited!

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Letters

of. Being an art student and an advertiser, I feel McAllister made a fine ad worthy of their name and product.

Keep up the good work!

KIRT STANKE

Merced, CA

I'm 13 years old, and I've seen a lot worse in *National Geographic*.

Also, congratulations on publishing the best R/C mag around! Give my regards to "The Ayatollah" and "King Ura!"

ADAM SVOBODA

Hinsdale, IL

Is she for real? Will she put a blindfold on her 13-year-old son when he goes to the beach? Will she boycott TV sets because of suntan lotion commercials? I think not.

By the way, I love your magazine.

TRIP WILSON

Durham, NC

I don't know why you're so mad, but pretty soon your son is going to want to start dating women like that. Also, it's just a drawing. It's a fact of life.

DANNY MOORE

Anoka, MN

I think that all of us are old enough to see a girl in a swimming suit.

ROBERT ROSS

Lake Mary, FL

I'm sure a 13-year-old boy has never seen a *real* woman in a bathing suit, let alone a drawing! It's not like there's a centerfold of a nude woman. Wake up, Mrs. Rodgers!

JASON DUIT

Doylestown, OH

Mrs. Rodgers, are you aware that there are more offensive things in the newspaper than in McAllister's ad? Is your child allowed to watch television or go to the movies? I think it's just a small offense blown way out of proportion.

SCOTT M. FERGUSON

Mulvane, KS

Come on, lady. Attack some serious issue, not a harmless hobby ad. Some people, in their own warped minds, find obscenity in everything.

D. WARNER

Dallas, TX

Mrs. Rodgers should be more concerned about other periodicals that her son has (or will see without her knowledge) that show *much* more in photo layouts—not art work—than this ad does.

It's interesting to note that Mrs. Rodgers reads *R/C Car Action*, or is at least very aware of her teenage son's reading material. How many other parents even care what the kids are reading or looking at?

PAUL BASS

Shelby, MT

If your son is 13 and has never seen a woman in a bathing suit, he's probably blind. I hope your child doesn't watch TV. So instead of worrying about R/C cars, worry about nude beaches, the KKK, nuclear arms and the care and treatment of hemorrhoids.

DANI COX

Paris, TN

I wish that I had started R/C car racing when I was 13 (I'm 26 now) instead of spending my money on some of the other foolish things that I did. Her son could be spending his (and her) money on some things that would *definitely* harm his body and mind, like drugs. So please, mom, lighten up. It's only a drawing for an ad.

TERRY MATTHEWS

Gadsden, AL

I agree with Chris: "There are many more horrible things to get upset about in this world than a drawing of a woman in a bathing suit."

DARIN DIAMOND

Jamaica, NY

(Continued on page 166)



The Inside Scoop

by CHRIS CHIANELLI



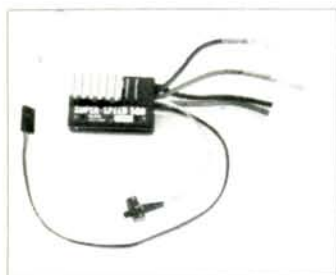
SOARING SAMURAI...WHAT NEXT!

WHAT WERE OUR friends across the Pacific thinking of?—or were they just thinking under the influence of too much saki? Flying Samurai—no racer should be without one. Next time some trigger-happy “hammer” won’t let you pass, call in “Chopper San” to cut



his car to ribbons. These warriors look fit to do battle with none other than “King Ura.”

* * *



ONLY A MATTER OF TIME

IT'S NO SURPRISE that Kyosho has finally introduced an electronic speed control. I hope the delay was due to *extensive R&D!* We'll put this one under the “Scoping Out” microscope as soon as we can.

* * *

WEST COAST PRODUCTION CLASS

RUMOR HAS IT that TQ Performance Products will be flagshipping its new product line with a high-quality, low-price production-class motor for those who weren't born with a silver servo in their mouth. Informants tell me that our new friends in California are associated with another major motor force in the industry; gee, I wonder who *that* could be?

* * *



KYOSHO HONDA F-1

HERE'S A FIRST look at Kyosho's new 1/18-scale Honda F-1 car that will be available in the late fall. The mini radio that's used in



Kyosho's electric motorcycle is most likely to be used in the car.

* * *

NEW TRAXXAS OFF-ROADER

TRAXXAS (maker of the Traxxas Cat, which won RCCA's “Ten Best” in the ready-to-run category, is in the final stages of testing its new competition-level 2WD off-roader. No details as yet; when we know, *you'll* know.

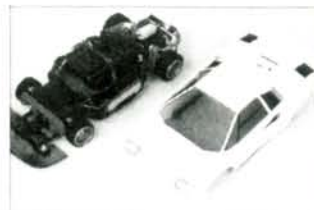
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KYOSHO KRUSER

JUST IN! We're sure this 1/10-scale Corvette Crusher is based on the Big Brute frame and suspension. I hope the production version retains the engine detail.

* * *



TAMTECH LAMBORGHINI

THE 1/24-SCALE Tamtech Testarossa (favorite of the Ayatollah) is now joined by a Lamborghini Countach. Maybe if I tell the Ayatollah that the Countach's brute horsepower makes it faster than his car in the 1/4-mile, he'll get bored with the Testarossa and give it to me!

* * *

KO...COAST-TO-COAST

ALL SMOKE SIGNALS indicate that, in the near future, the KO radio line will be distributed by a major force on the east coast—sounds like a monster move to me!

* * *

Keeping the industry BUGGED, I'll see you next time—or sooner, if I catch you in my spyglass!

CC



MONEY TALKS... THE DRIVERS SHOWED



Above: Wayne Leary is correcting a 1/4-scale chassis-tweak problem with a hammer. It worked well enough for him to finish 5th in the feature.

Right: Many Super Chevy Sunday fans saw R/C racing for the first time.





Roger Gustin's Lava Machine was a real crowd pleaser, especially in full after-burner.

SUPER CHEVY SUNDAY

by RICH HEMSTREET

NEARLY 100 ENTRIES showed up at Indianapolis Raceway Park (IRP) for the Quarterscale Midwest Championships. Drivers from across the country competed for a share of the \$7,700 purse. First place in each of the $\frac{1}{4}$ -scale A-Mains was worth \$1,100, and the $\frac{1}{10}$ -scale Outlaw A-Main drivers vied for a \$300 top prize.

The races were held in conjunction with the Super Chevy Sunday at IRP, and nearly 75,000 spectators turned out for the three-day event. Full-scale drag races

SUPER CHEVY SUNDAY



Bud Bartos easily captured the Outlaw Electric Main.



Bill Prehn's I-HOP car won the Winston Cup Concours.



Texan Bill Gilmore won Supermodified Concours.



John Druskis won Concours and the Sprint-Car feature.



The Midwest Championship took place on the front stretch of the IRP oval.

ran continually (along with an occasional run by the jet-powered Lava Machine); Chevy parts were swapped right and left; and Chevy show cars competed for awards. The R/C racing took place on the front stretch of the IRP $\frac{5}{8}$ -mile paved oval. Unfortunately, access to the oval track wasn't easy for many Chevy fans; the dragstrip was a barrier between the huge crowd and the R/C oval, and probably no more than 200 spectators

were watching the R/C racing at any one time.

Several factory-backed drivers showed up at IRP, including Ralph Burch, Jr. (WCM*), Chris Rahe (RACO*) and Lorenzo Benton (Auto Engineering*), who were all looking for the \$1,100 top prize. Bud Bartos came for a chance at the Outlaw $\frac{1}{10}$ -scale money, and he also picked up a ride in the $\frac{1}{4}$ -scale Supermodified Class.

DAVID DEFEATS GOLIATH

AFTER THE MAINS were complete, the top six qualifiers in each class ran six-lap trophy dashes. There was no money on the line; just bragging rights and a trophy. John Druskis topped off a good day by winning the Sprint-Car Trophy Dash.

In the Supermodified Class, Jim Golay followed up his A-Main win with a victory in the Trophy Dash. Ralph Burch was the odds-on favorite to win the Stock-Car Dash, but he couldn't make it to the green flag, let alone the checkered flag. His car had cooled off so much that it could no longer run on alcohol. Mike Schmidt ended up winning the Stock-Car Trophy Dash with his RACO car.

The final event of the weekend was a challenge match. The WCM team had challenged Bud Bartos to a 15-lap shootout. Tenth scale versus $\frac{1}{4}$ scale looked like a high-speed David versus Goliath! It was agreed that there would be a rolling start, with Bartos starting behind Ralph Burch's

supermodified. Bartos wasn't going to take any chances. While he used a 6-cell 1200mAh pack to win \$300 in the A-Main, he built a 7-cell, 1700mAh pack for the match race. After following Burch for one lap, Bartos blew by on the inside of turn



one. Five laps later, Bartos was perched on Burch's rear bumper again, ready to lap him. Bartos stayed behind for a couple laps before another inside move put him ahead of Burch again. Bartos cruised on to an easy victory, and Goliath went down in defeat again. ■

Friday was devoted to practice and registration, as the 1/4-scale drivers tried to get their cars dialed-in on the track, which had two long straights, connected with tight turns at each end. Because of the banking on the IRP oval, turn No. 1 went uphill to the backstretch, while turn No. 2 was a downhill affair that forced the cars off-camber as they accelerated down the front stretch. The 1/4-scale cars weren't affected by the rough spots on the track, but the 1/10-scale cars really got bounced around. The tighter the line that the 1/10-scale cars ran around the turns, the faster their lap times were, but the 1/4-scale drivers generally found that their cars were quicker when they ran the corners a little wider.

The 1/4-scale drivers ran their usual format, with single-car qualifying, followed by heat races, and drivers moved into the Mains based on their finishing positions in the heat races. In both the Sprint Car and Supermodified divisions, the first and second place 10-lap heat finishers moved into the A-Main, and the 10-car line-up was rounded-out by transfers from the B-Mains. In the Winston Cup Stock Car Class, only the four heat-race winners moved directly into the 150-lap final. The other six starting spots were filled by the top six B-Main finishers.

The 1/10-scale cars ran three 4-minute qualifiers; again, the B-Main winner was able to transfer to the A-Main. The Outlaw rules called for \$80 motors and a maximum of seven sub-C cells. Both on-road and dirt-oval cars showed up for this no-holds-barred event.

Texan Gary Guffey captured the sprint car TQ spot with an 8.350-second lap in his WCM sprinter. Denny Stewart (also from Texas) was second fastest with his Alves* sprinter. Mike Schmidt of Texas ran his RACO car to an 8.666-second lap to set the fastest time for the Supermodified division. Jim Golay of Indianapolis also drove a RACO car to the second-fastest time. Ralph Burch, Jr. made it a sweep for Texas when he became the top qualifier in the Winston Cup Class, driving his WCM car to a 9.283-second qualifying time. J.D. Crow of Arkansas was second fastest with his RACO stock car. Bud Bartos set fast time with a 28-lap run in his first qualifier,

(Continued on page 38)

SPRINT CAR A-MAIN

Finish	Start	Name	Car
1	3	John Druskinis	WCM
2	9	Ralph Burch, Jr.	WCM
3	6	Ace Acevedo	WCM
4	2	Denny Stewart	Alves
5	1	Gary Guffey	WCM
6	7	Steve Quartermouse	WCM
7	8	Tim Young	WCM
8	5	Carroll Cheek	WCM
9	4	Roger Newell	WCM
10	10	James Wilfong	WCM



SUPERMODIFIED A-MAIN

Finish	Start	Name	Car
1	2	Jim Golay	RACO
2	4	Chris Rahe	RACO
3	10	Brian Davy	RACO
4	3	Ralph Burch, Jr.	WCM
5	9	Wayne Leary	WCM
6	7	Roger Newell	RACO
7	5	Bill Gilmore	RACO
8	1	Mike Schmidt	RACO
9	8	Pat Kelsey	RACO
10	6	David Garner	scratch



WINSTON CUP A-MAIN

Finish	Start	Name	Car
1	1	Ralph Burch, Jr.	WCM
2	10	Mike Johns	RACO
3	8	Steve Quartermouse	WCM
4	9	J. D. Crow	RACO
5	6	Craig Bliss	RACO
6	7	Jason Brommerich	WCM
7	3	Monte Richard	WCM
8	2	Chris Rahe	RACO
9	5	Mike Schmidt	RACO
10	4	Bob Yelle	WCM

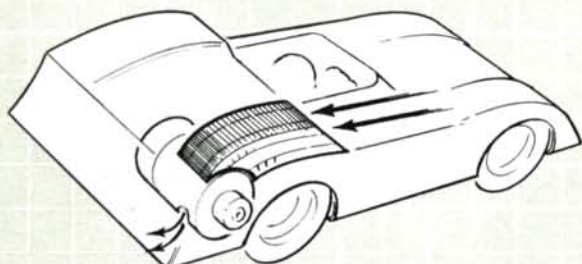


OUTLAW ELECTRIC A-MAIN

Finish	Start	Name	Chassis	Motor
1	1	Bud Bartos	BoLINK	CAM
2	3	Jay Bowman	Warrior	Peak Performance
3	2	Greg Cobb	BoLINK	CAM
4	8	Richard Durnell	BoLINK	Linder Electric
5	4	Terry Watson	Lazer Lite	Hurricane
6	7	Tony Williams	BoLINK	Losi
7	5	Don Knight	Lazer Lite	CAM
8	6	Tom Jones	TRC	Lightspeed
9	9	Mike Grib	BoLINK	Losi

Pit Tips

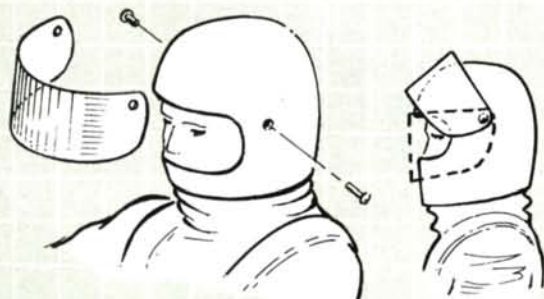
by JIM NEWMAN



COOLING DUCT

Here's something you can do to lengthen the life of your brushes and commutator—blast cold air directly on to them. The duct is easily made from an index card and taped together. Cut an intake in the body (preferably in the scale position) and hold the duct in with dabs of tub sealer. Works great! This driver also claims he gets longer runs.

Brian Staley, Birmingham, MI



RACING VISOR

How about giving your driver some eye protection? Make this visor from a thin, transparent plastic sheet and a couple of straight pins cut $\frac{1}{8}$ -inch long. The visor can be tinted in hot RIT dye or by sticking on Zip-a-Tone transparent colored film from the art store. Place a small drop of craft glue in each hole before inserting the pins, then check that the visor will swivel up and down.

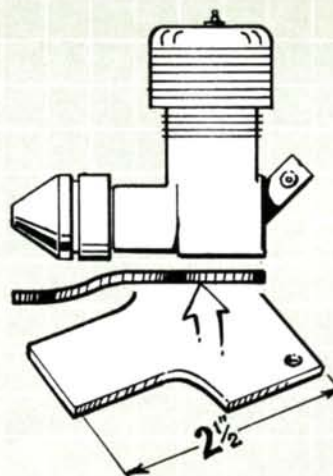
David Cohan, Wakefield, MA



BODY-CLIP STORAGE

For those who *still* won't secure their clips to the car with cord, try this: Use double-stick tape to attach a small piece of a magnet to the top of the bodywork. When you remove the body clips, place them on this instead of in the dirt or grass.

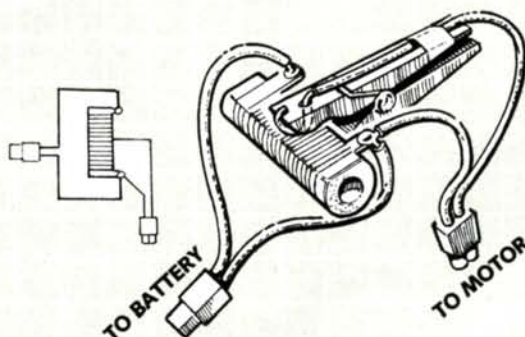
Jeffrey Swain, Osceola, MO



SKID PLATE

When the suspension bottomed out in a hole, this driver found that the starter cone of his Kyosho Assault was hitting the ground, sometimes stopping the engine. As a cure, he took thick plastic, cut it to the shape shown, formed it over a hot stove then screwed it below the engine.

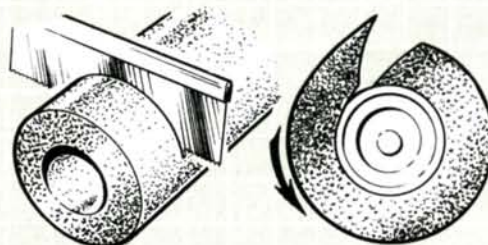
Danny White, Chicago, IL



BENCH SPEED CONTROLLER

This car owner found this item useful on the bench when testing, cleaning and breaking in motors. The essential components are an unused speed control resistor and a clothes pin. Drill the end of the pin as shown, feed the wire down through the hole and secure it with a drop of glue. Connect everything as shown and attach the required plugs.

David Jorgensen, Yakima, WA



LOW-COST TIRES

Here's a source of tires for just messing about on asphalt. Obtain a length of sponge rubber (not foam plastic) water pipe or air conditioner insulation and slice it into tire-size lengths. An X-Acto or Zona saw works well. Make an angle splice as shown, wrap double-sided adhesive tape around each wheel rim, then place the tires on the rims, gluing the splice with a good silicone adhesive. Note the direction of the splice—the tire shouldn't peel off the rim under acceleration.

Manar Latif, Selangor, Malaysia.

Radio Control Car Action will give a free one-year subscription (or one-year renewal if you already subscribe) for each idea used in "Pit Tips." Send rough sketch to Jim Newman, c/o Radio Control Car Action, 251 Danbury Rd., Wilton, CT 06897. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. Because of the number of ideas we receive, we cannot acknowledge each one, nor can we return unused material.

SCOPING

BY RUDY MEYER

OUT

SCOPING OUT: As we're committed to bringing you the most up-to-date technical information on R/C products, Radio Control Car Action now has Rudy Meyer, an accomplished electrical engineer, to test the newest high-tech electronic equipment that's flooding the R/C market. "Scoping Out" is a two-part test in which a product is first subjected to extensive bench testing using sophisticated equipment and then actually used in the field. These tests will allow us to expose any ridiculous performance claims and, at the same time, provide R/C car enthusiasts with invaluable information on where they should put their money!

WHAT'S 1x1.9x.5 inches and weighs 1.3 ounces minus heat-sinks and wires? If your answer is the Victor VIC-4A Electronic Speed Controller, you're right. The Victor VIC-4A has the following features:

- Battery eliminator circuit (BEC)
- Opto-coupled input to output
- Full-speed LED indicator
- Proportional acceleration and braking
- Easy adjustment
- Large selection of receiver connectors
- Ten-cell (12V) battery capability

The BEC allows you to power the model's receiver from the motor battery instead of having to add a receiver battery pack, which takes up space and adds weight.

Opto-coupling the input to the output gives excellent isolation to the



TEST DATA

Model Victor VIC-4A

DIMENSIONS:

Height5 inch, minus heat-sinks
 Width 1 inch
 Length 1.9 inches
 Weight 1.3 ounces, minus heat-sinks and wiring
 Access to Controls Excellent
 Ease of Adjustment Good

ELECTRICAL: (Manufacturer Specs)

Max Voltage 10 cells; 12V
 Max Current 320 amps
 Max Voltage Drop 360V
 at 180 amps
 Continuous Current .. 180 amps

TEST PARAMETERS:

Voltage 6V
 Current 12 amps
 Voltage Drop .. .1V (from battery terminal to motor terminal)
 Price as Tested \$189.95

The VIC-4A, Victor Engineering's Top-of-the-Line

receiver. This means that if anything goes wrong inside the speed controller, the motor battery can never make contact with the receiver signals and destroy your receiver.

The full-speed LED aids in the adjustment of the VIC-4A. When adjusting the rate potentiometer for maximum motor rpm, you'll know you're at the maximum when the LED extinguishes.

With proportional acceleration and braking, the modeler can dial-in the optimum interaction of the speed controller, receiver and model to the track conditions.

To eliminate the need for an insulated adjustment tool, both the rate and neutral pots are mounted as closely as possible to the surface of the top cover. This also eliminates fumbling to find the slot in the pots.

The VIC-4A can be purchased with the following receiver connectors:

- Futaba G or J
- Airtronics
- KO-Propo

With the VIC-4A's cell capability, you're not limited to a 7.2V battery, so the unit is suitable for drag racing.

Like all the speed controllers we test, the VIC-4A was tested on our standard test bed. The test bed consists of a 6V lab power supply capable of 20 amps, an oscilloscope to monitor the output and to ensure that at max throttle the speed controller is fully on, a digital voltmeter to measure the voltage drop across the controller, a motor to evaluate the braking capabilities, and a supplemental load to increase the motor current to 12 amps. The

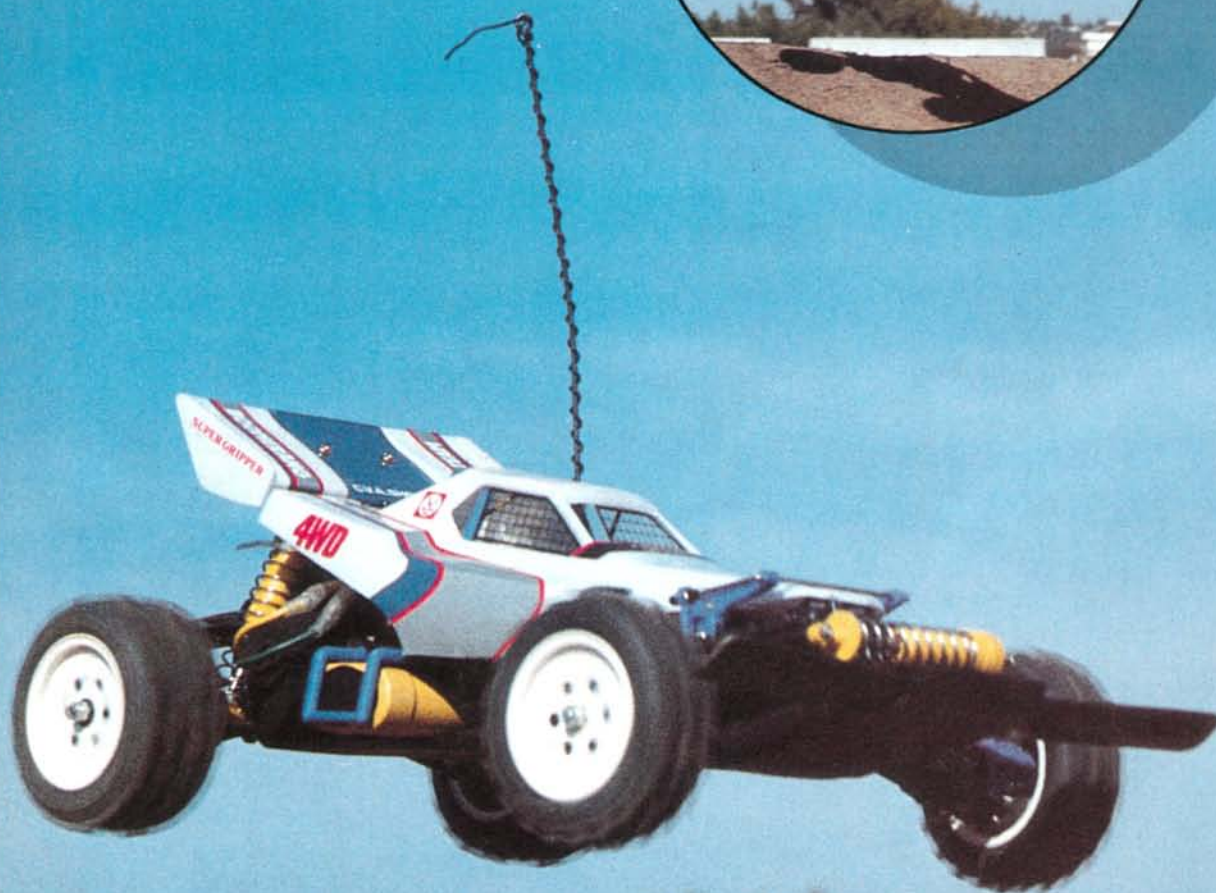
(Continued on page 52)

BUDGET

More bang
for the
boom!

by MIKE LEE

BOONMEE RANG



IN KEEPING WITH OUR "Budget Racer" series, I'll show you how to make the most of a 4-wheel driver with the least expense. There's no doubt that today's 4WD vehicles are great dirt machines. But, because of their

weight and increased number of parts and gears, they won't do well against the

standard 2WD cars on the wide-open tracks with long straights. To stay ahead, you may have to make some minor modifications. In this article, I'll show you how to get the most from the 4WD Tamiya* Boomerang without breaking the bank.

The stock Boomerang is a shaft-driven 4WD car with planetary gear differentials, three-point oil-filled suspension, and double A-arms on both front and rear. It has a tub chassis and knobby tread tires all around. This makes for a pretty good little dirt burner. Build it exactly according to the plans and you'll have a car that performs like this: lap time (oval track)—12-second average; lap time (road track)—22-second average.

The Boomerang used an RS540 motor, a 13-tooth pinion, and the stock shock oil, which were all included in the kit. It also used a standard 6-cell Sanyo pack (not included). The track was a standard 1/10-scale oval. The road course was the oval track with road portions inside the infield portion of the oval. Three drivers ran the car, and the times shown above are the average lap times recorded from all three drivers.

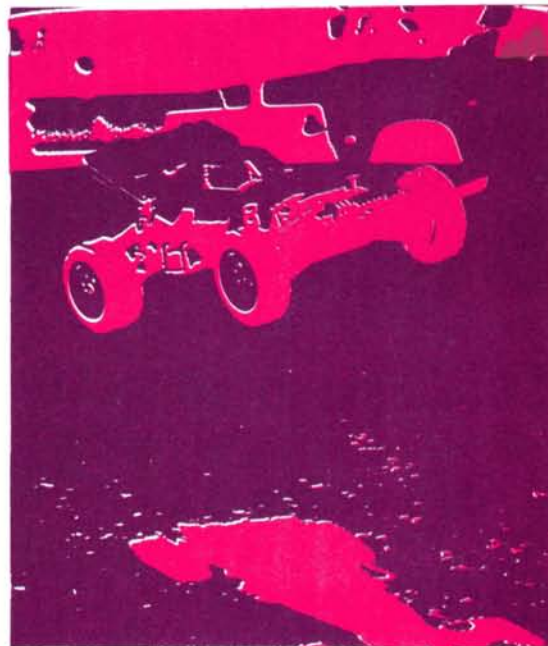
Just to show how competitive this is, the average lap time for this course on the oval is 10 seconds in competition. One lap will be lost to every five laps of a competitive car. In an actual race, a competitive car will make 24 laps in a four-minute race, while the Boomerang will

have only 20 laps. On the road course, our lap time of 22 seconds is outdone by a competitive lap time of 20 seconds per lap. There's a bit of catching up to do.

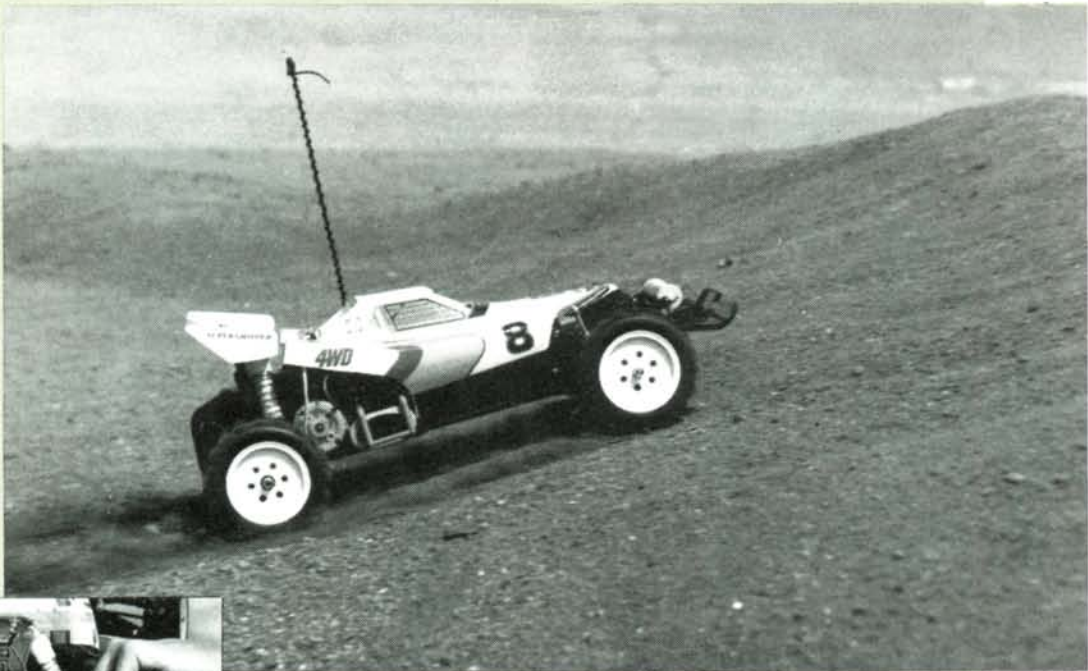
It's important to carefully follow the instructions. Cutting a corner here or there only cuts your own throat. One of the more common problems found in plastic cars is in the parts themselves. Some have extra plastic called flashing, which must be carefully removed to ensure a proper fit. This may

(Continued on page 27)

Stacie Conway takes the newly modified Boomerang for a small jump on its maiden run.



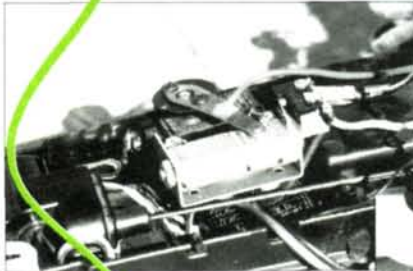
Photos by Mike Lee.



Note the amount of side play exhibited by the right rear tire of the Boomerang due to wear on the kit's plastic bearings. This was the amount of wear noted after only eight battery runs on the car. Aerotrend ball bearings cured this condition permanently.



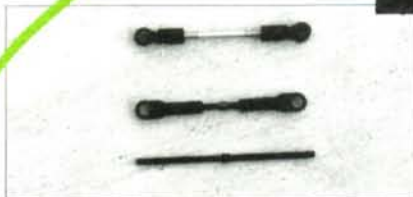
Stock front spring proved too soft to cut it under the drop test. Simple fix was to stretch it.



The BoLINK multi-band resistor speed controller installed in the Boomerang. This replaced the kit's three-speed unit and provided much better throttle control and braking.

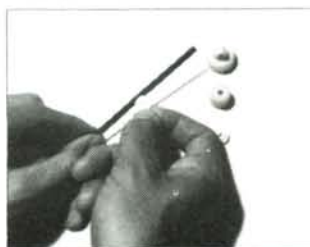


Get rid of the heat-trapping rubber boot that comes in the kit, and let your motor breathe with a foam end-bell cover like this CRP unit.



Above: The Du-Bro adjustable tie-rod link replacement for the kit tie rods. The new units allow adjustment without removing the tie rod from the car.

Right: To get smooth action and precise dampening, a file was used to carefully remove the plastic flashing from the shock pistons and tops. You must do this to get the most from the shocks.



seem picky, but the payoff comes with the shocks. Flashing on the shock pistons will cause the shocks to bind and that affects the suspension.

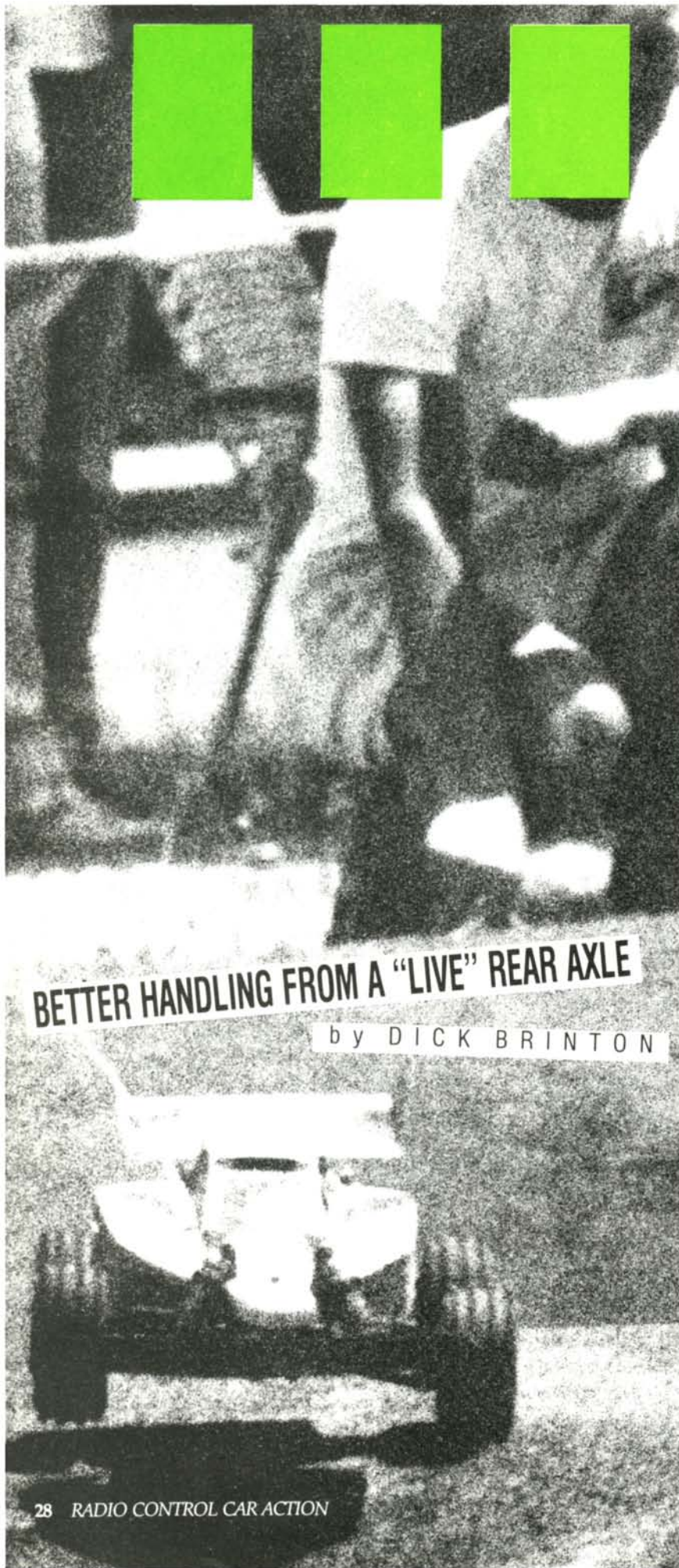
A choice of three different pistons for shock assembly allows you to dial in the suspension. I chose the pistons with two relief holes in them. Not only was there just a bit of flash, but the molding tab (the place where the part is cut away) was also an obstruction on the face of the piston. The excess plastic was carefully cut away and the edges were filed smooth.

After assembly and the initial placement of the shocks on the car, the drop test showed that the springs weren't really carrying the entire load. The car bottomed-out on eight-inch drops. The bottoming problem was solved by stretching out the springs about one-third longer than stock. (See photo.) Dampening from the oil-filled shock cylinders did the rest of the job. You don't need to replace stock Tamiya shocks if you make the modifications I've just described and determine the correct viscosity oil that the shock needs for track conditions. The oil supplied in the kit was sufficient for our track, and the result was a suspension that soaked up the big bumps just like it's supposed to.

I carefully removed the flashing from the rest of the parts to ensure that everything fit properly. I also made sure that the suspension arms moved freely. In fact, when not attached to the wheel and shocks, they should just flop up and down—no stickiness allowed. For friction-free movement, the differentials should be greased at all moving points. Finally, be sure everything is kept as clean as possible.

For the control, I chose the Challenger 260, 2-

(Continued on page 56)



BETTER HANDLING FROM A "LIVE" REAR AXLE

by DICK BRINTON

BUDGET RACER

THIS MONTH, the subject is handling—specifically, handling of cars that have a one-piece differential/axle assembly, including the Traxxas* Cat, MRC/Tamiya* Grasshopper and Hornet.

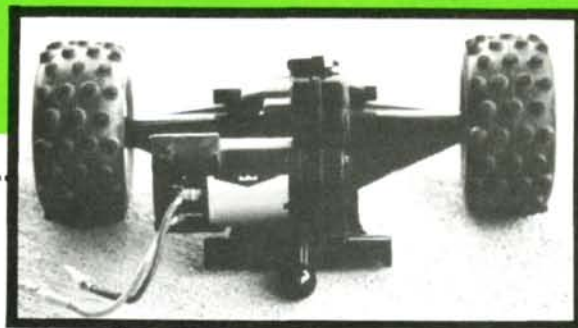
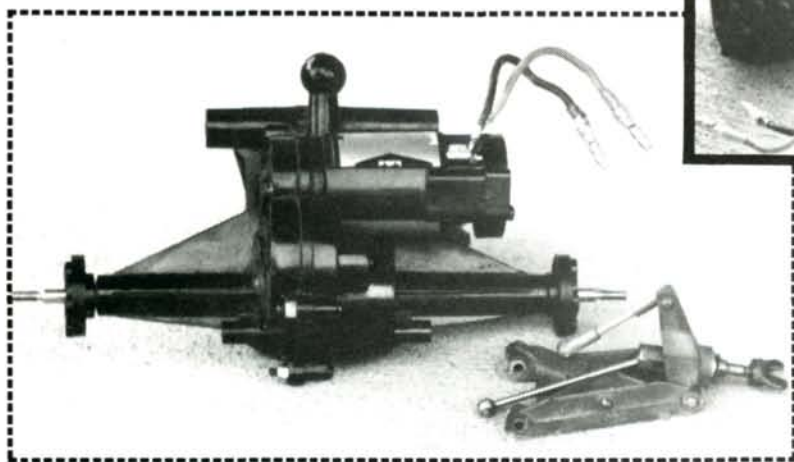
This type of rear end is strong, easy to manufacture and doesn't require a lot of maintenance, but the handling problem it produces is particularly difficult to correct. Let's take a look at the problem and then I'll describe some steps to improve your car's handling.

For years, designers of full-size race cars have done everything possible to reduce "unsprung" weight. Hey, wait a minute—what's *that*?

Unsprung weight is simply the weight of any part of the car that doesn't rest on the springs. For instance, the tires and wheels are unsprung weight—there's no spring between them and the racing surface. The battery pack, which is in the chassis that rests on the springs, is *not* unsprung weight. OK, but why do engineers want to reduce this unsprung weight?

Imagine that you're standing at the bottom of a ramp that has a bump in the middle of it. Your friend rolls a rubber ball down the ramp. It hits the bump, flies into the air and you catch it—no problem. The ball is light and you don't have to work hard to stop it in your hands. You don't even feel the impact.

But suppose we use a much heavier ball, like a bowling ball. It hits the bump, sails into the air and you catch it. This time you have to *work* to stop its flight. It may knock you back a step or two. (It's a rule of mine never to catch a flying



Above: Typical unsprung weight in a solid-axle car. This one is from Traxxas Cat.

Left: Here's a graphic illustration of the difference in unsprung weight between a solid-axle car and an independent-suspension car.

bowling ball, so I don't know how far back it would knock you.)

Now, if the ramp is the track surface, the bump is a bump on the track, the balls are unsprung weight and you're the spring/damper unit, the picture becomes clearer—and we see why less unsprung weight is better.

For example, a car running on the track hits a bump that forces a wheel into the air. If the wheel is light, the spring/damper unit doesn't have to work very hard to control the motion. If we could control the motion perfectly, the wheel would follow the contour of the bump while the rest of the car continued moving undisturbed. This ideal isn't always achieved: If the bump moves not only the wheel, but also the whole axle/differential assembly along with it, the spring/damper unit has its work cut out for it. Often the weight of the whole rear-end assembly is rammed upward by the bump. The spring/damper unit can't control it, so the moving weight uses up all the available suspension movement and finally slams the whole car into the air. Remember the bowling ball? This is *not* the way you want your suspension to work!

This effect can be seen in the rear of a solid-axle car as the car races down a series of ruts. The car chatters its way along, the driver can't get traction or braking, and sometimes the car just heads off into the weeds.

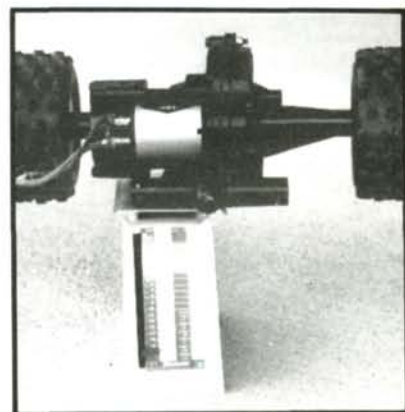
What can be done to improve the situation? Let's start with the modifica-

tions that cost nothing—except a little of your time.

- Maintain your suspension. Make sure the parts are clean and work according to the manufacturer's design. Off-road cars require much more maintenance because they're run under such dusty conditions. If you have a pivoting differential, as the Traxxas Cat does, make sure it pivots freely. If the stops are replaceable, make a set that allows the axle to pivot further. This will help in some cases. You'll just have to experiment a bit.



The scale reads 4 ounces. This is the rear suspension of an Associated RC10.



The scale is reading over 16 ounces, which is typical of a solid-axle car.

easier to control. The softer the spring, the more the impact is spread. Of course, a hard jolt can cause the soft spring to compress all the way to "coil bind." When this happens, the spring stops working and the car starts flying. Still, it's generally better to err on the side of too soft than too hard where springs are concerned. There's no setting that works for all track conditions; just remember to try softer springs first. Incidentally, cutting coils off a spring doesn't soften the spring—it stiffens it.

- Try using thicker damper oil along with the soft springs. (If you use 10 weight, try 20 weight; if you're already using 20 weight, try 30 weight.) Less expensive dampers don't usually have the fine valving of the more expensive ones,



Long, controlled slides are easy when the suspension works well. This is an RC10. A "live"-axle car can't compete with an RC10, drivers' abilities being equal. You can maximize the performance of a live-axle car, but you must first understand its limitations.

so heavier weight oil may be needed. The function of the damper is, of course, to dampen. When a spring is compressed and released, the spring rebounds, compresses, rebounds, compresses, etc. It's like plucking a string on a guitar; the sound dies out slowly. But if you place your finger on the vibrating string, your finger works to dampen the string. It's the same with the damper unit.

- Make sure your differential is working correctly. If you're getting more drive to one wheel than another, your car will veer to one side. If your car makes turns easily in one direction but not in the other, this is one place to look.

- Check your front-end alignment. Unless you're running on an oval track, your alignment should be the same for both front wheels. A front end that's out of alignment can cause poor (or unpredictable) recovery from bumps.

- Change the way you drive the track. Slow down in the sections where your car doesn't handle well, and make up lost time in sections where it does better. Experiment with different lines through difficult places. Sometimes you can discover a way that looks wrong but works. Winning races requires thinking under stress.

So much for the free modifications. The following ones may cost some money, but the benefits will outweigh the cost.



Right: A Big Bear tire compressing under the weight of a thick book.

Left: A Blackfoot tire under the same weight. Notice how much softer the Big Bear tire is, even though both have approximately the same diameter. The Big Bear tire really improved the handling of the Blackfoot.

and wheels on my Blackfoot, and the bump-absorbing ability doubled. The Big Bear tires are wider, but they're also much softer, which helped smooth the bumps considerably.

- When you wear out your stock spring/damper units, buy a replacement set that provides better bump control. Remember, you're looking for relatively soft springs with good damping.

OK, now you've done all this work and your car handles well. Is there anything else you can do? Yes: practice, practice, practice. Once you have your car working well, learn how to get the most out of it. Remember, no matter how "trick" you get your car, you must be able to drive it to the maximum under *all* conditions if you want to win races. Try to learn something new and valuable every time you drive your car.

Next month, I'll start Project Falcon, which will be an in-depth look at making Tamiya's Falcon a first-class budget racer. And while I'm at it, I'll continue with the fundamentals that work on all R/C race cars.

- Replace worn-out tires with the lightest, softest ones you can find. Lightness helps reduce the unsprung weight. Soft tires can absorb some of the shock from bumps and reduce the load on the spring/damper units. I put a set of Big Bear tires

See you at the track!

**Here are the addresses of the companies mentioned in this article:*

Traxxas Corp., 12150 Shiloh Rd. #120, Dallas, TX 75228.

MRC/Tamiya, 2500 Woodbridge Ave., Edison, NJ 08817. ■

PART II

UFO

(UNCOMPLICATED FINISHING OPERATION)

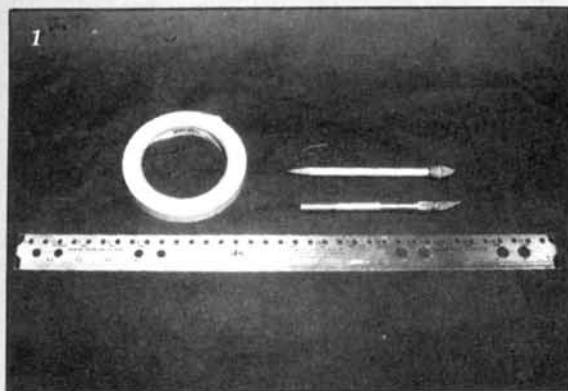


photos by Rich Uravitch

by RICH URAVITCH

HOW TO SHOOT FROM THE OUTSIDE!

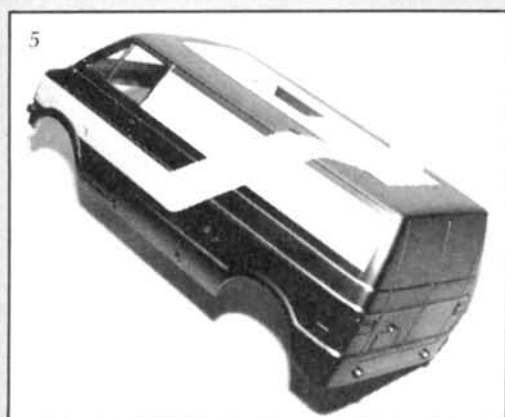
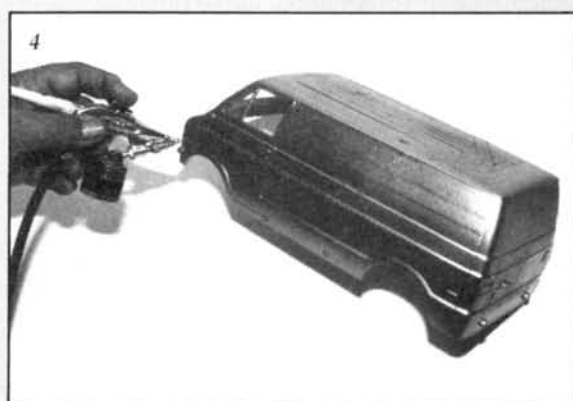
BACK IN THE JULY '88 ISSUE, Part One showed you how to use store-bought spray cans of paint to put a unique finish on your injection-molded polystyrene bodies.



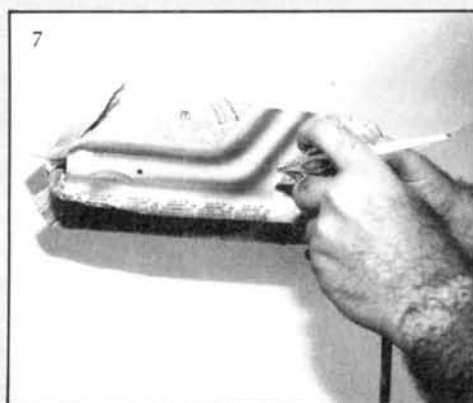
1. Basic ingredients for a hot paint job: ruler, pencil, masking tape and a sharp modeling knife, like an X-Acto.
2. The first step in any paint work should consist of a thorough scrubbing in detergent and warm water, followed by an equally thorough drying.



3. Masking tape is applied to develop the basic scheme.
4. Base color coats are applied with the airbrush. Three thin, even coats are plenty.

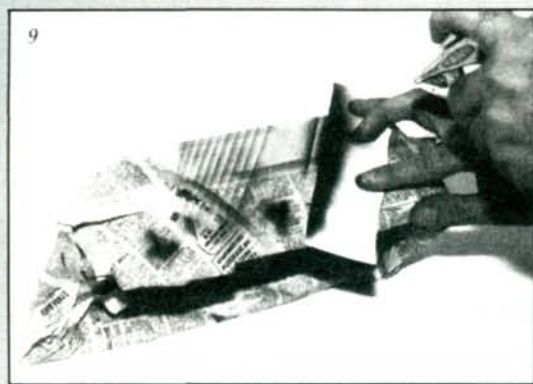


5. With initial masking tape removed, scheme is starting to shape up.
6. All areas with base color coats are then masked and the second color is applied. Use old paper to prevent ink from transferring to painted surface.



7. Trim or accent color is now airbrushed along the edge of the second color.
8. Masking material has been removed. Area will be remasked to paint roof and side panel inserts.





9. A simple, cardboard mask is used to create a shading effect on top and sides. Work carefully, hold mask steady.
10. The completed Lunch Box body awaiting RCCA decals and clear top coats. Looks a little different than a stock one, doesn't it?

Those techniques, like the ones shown here, are also suitable for the clear, vacuum-formed polycarbonate bodies, except, of course, that clear bodies should be painted from the inside.

In Part One, we used Tamiya's* Midnight Pumpkin as the subject vehicle; this time we chose their Lunch Box. In addition, Part One used spray cans to apply the paint; now we've advanced to the use of the airbrush and masking or frisketing. Sooner or later, if you're serious about Concours or trick finishes, you'll come to view these techniques and equipment as indispensable.

The photos describe the procedure thoroughly enough to allow you to do a presentable job on your first attempt, but each subsequent attempt should be better than the last as your style develops. If you're new to airbrushing in general, it would be a good idea for you to review the articles on the subject which we've



11. Ready to roll, the trick paint Box stands out above all stockers. Hot paint rules!

Sooner or later, if you're serious about Concours or trick finishes, you'll come to view these techniques and equipment as indispensable.

presented in previous issues of *RCCA*. You might want to buy some white poster board on which you can practice. It will give you a better feel for what your planned creation will look like before you commit paint to plastic.

To highlight some of the more important points before you start:

- The airbrush must be absolutely clean before each painting session. As a general procedure, clean it thoroughly after each use to make certain it will be ready for the next use. Cleaning it right after you're finished is best because removing wet paint is *much* easier than removing caked on, dried paint.
- Wash and scrub the body thoroughly with warm water and detergent before masking. This will remove any traces of release agents used during manufacture.
- When using masking tape, always use a soft pencil to lay out your design and a sharp No. 11 X-Acto blade to cut the tape on your pencil line. *Never* use the edge of the tape right off the roll to mask a straight line. *Cut* a straight line about $\frac{1}{16}$ inch from the edge after putting the tape in position. Using the normal edge of the tape will allow color to bleed under,

causing a ragged edge, which is impossible to clean up. It may be camouflaged with striping tape, if that suits your scheme.

- Try to use old newspaper, or better yet, unprinted newspaper for masking paper. Using freshly printed paper might result in some of the not-completely-dry ink transferring to your painted surface.

Your imagination is the only limiting factor to the paintwork you can apply to your racer. Give it a try, and send us some pictures of the results.

**Here is the name of the company mentioned in this article:*

MRC/Tamiya, 2500 Woodbridge Ave., Edison, NJ 08817. ■

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ULTRA



WARRIOR

CHEVY SUNDAY

(Continued from page 19)

running his BoLINK* Eliminator 10 on a 6-cell SC pack, while everyone else used 7 cells. Greg Cobb ended up as the second-fastest qualifier, also with an Eliminator 10.

Concours started the Sunday morning activities. Bill Prehn of Illinois won the Winston Cup Class Concours; Texan Bill Gilmore captured the Supermodified Concours event, John Druskinis of Michigan won the Sprint-Car Concours

Class with his Hardee's sprinter; and Ryan Moore used a year-old Bobby Allison Miller car to win the 1/10-scale Concours.

Both the sprint cars and the super-modifieds ran 30-lap A-Mains. There's an old saying that if you win Concours, you'll have a bad weekend of racing, but John Druskinis disproved it when he captured the sprint-car A-Main. Ralph Burch, Jr. was closing in on him at the end, but ran out of time, and Ace

Acevedo finished in third place. Jim Golay pulled off a hometown victory in the supermodified feature race. Chris Rahe finished second, while Brian Davy came from the tenth starting spot to finish third. Rahe and Davy both came to IRP from California to race their RACO machines. Bud Bartos ran a clean race to win the \$300 Outlaw 1/10-scale feature, while Jay Bowman came in second with his Warrior dirt-oval car, and Greg Cobb

(Continued on page 52)

Milt Video R/C Car Companion

— the best and fastest way to get started in R/C cars.



Can't get to sleep because your new R/C car is in a pile of parts on the kitchen table? Relax — stick the **R/C Car Companion** from Milt Video in your VCR and let the pros show you how to do it right the first time!

This professionally produced, full-color 35 minute videotape takes you from the box to the starting line with great action footage and the answers to many questions you may have about R/C cars and trucks. The R/C Car Companion guides you step-by-step through the assembly and set up of R/C's Entry-Level Car of the Year: the Kyosho Raider. Discover how to select the best model for your level of interest, which tools you need for assembly, and how to paint your car to achieve a raceway finish. You even learn driving and performance hints from R/C car experts such as Bill Fries and "Crazy Chris" Chianelli. These voices of experience let you in on the tips that can make your machine the "baddest in the land" — secrets that might take years to find out if you were on your own!

So if the difference between a dogbone and a shinbone has you flustered, don't worry — you can always rely on the R/C Car Companion from Milt Video to set you straight. It's the R/C pit crew that's ready to get you started in R/C buggies the fun and easy way. Test-view the R/C Car Companion at your favorite R/C car dealer today! Available in VHS or Beta.



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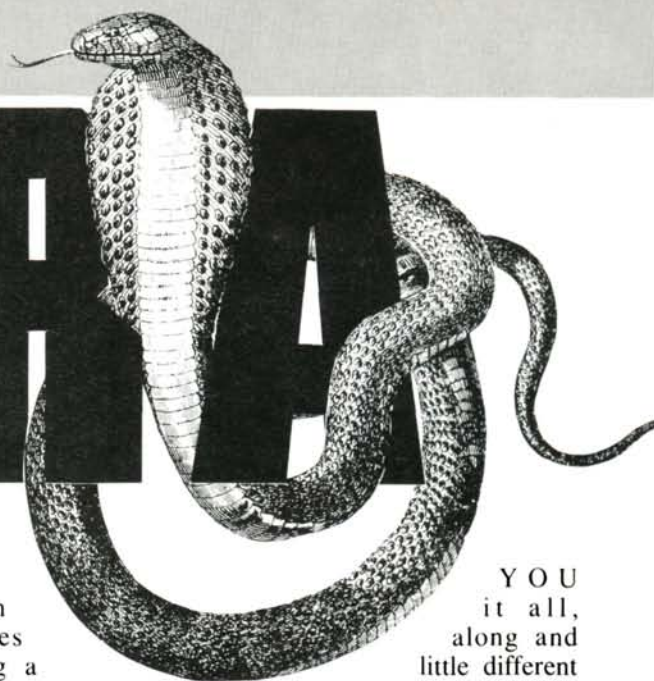
COBRA

by ERIC GOLDSCHRAFE

JUST WHEN think you've seen somebody comes does something a and comes out smelling the case with the Cobra, an on-road of new wrinkles, from C&M Manufacturing*. After talking to C&M's Chris Ferrell, I was really anxious to get this car together and to find out if the claims were true. I was not to be disappointed!

The Cobra is an easy-to-assemble car with an epoxy fiberglass sheet chassis, full front and rear ball bearings, three sets of thrust bearings, and a ball differential with

YOU it all, along and little different like a rose. Such is chassis with a couple



an aluminum hub. It will accept both saddle-pack and stick Ni-Cd battery packs, and C&M claims it's "an out-of-the-box winner—no need to modify!" A multi-sheet instruction book with plenty of illustrations guides you through the build-up, and gives some set-up and racing suggestions at the end. Besides the fiberglass chassis parts, several proven and reliable Associated* front- and rear-end pieces come with the kit. As with most cars of this type, the motor, steering linkage, electrical parts and R/C gear are not included. However, a set of mounted and trued tires and wheels is provided. You must also provide a body and some common hand tools.

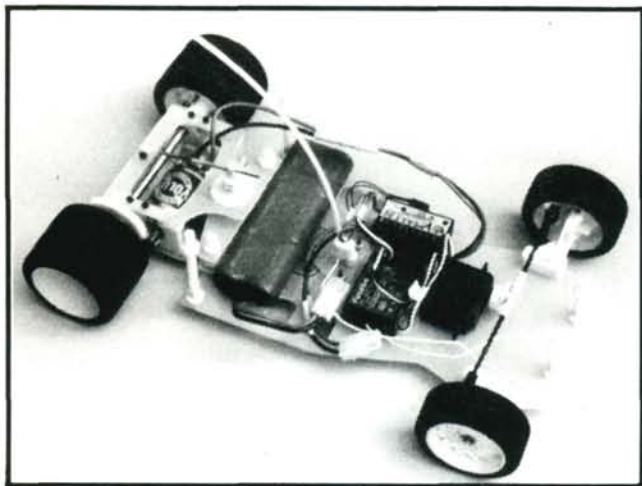
Construction begins with the front end—a robust and sensitive unit using the aforementioned Associated parts. RC 12L steering blocks were included, as C&M thinks that their positive feel enhances the driveability of the car. DuBro* No. 4-40

ball-end fittings were utilized, along with a set of their turnbuckle-adjustment connecting rods. There are several good steering-linkage setups available, but I decided to try this rig as it is strong and relatively slop-free. A Futaba* Magnum Junior radio was chosen to operate this car, and one of the servos was fitted to the chassis between the wheels. An MRC

seen, and the adjustability is fantastic. The combination of precision parts and extra thrust bearings gives this assembly a fit and feel not obtained in other cars, and it also contributed to this car's winning performance.

A Rudy Meyer-prepped Victor* electronic speed control was installed, along with the Futaba receiver, and the R/C installation was checked out. The antenna and body mounts were added, and the chassis was ready to receive the TRC wheels provided in the kit. Green compound front tires and yellow rears were used for the "hot" setup on carpet. If you're racing on asphalt or cement, a harder-compound front tire will probably be necessary. You could also install a Pro Line* front bumper to add some protection to the steering system, but you'll have to do a little drilling to get it attached.

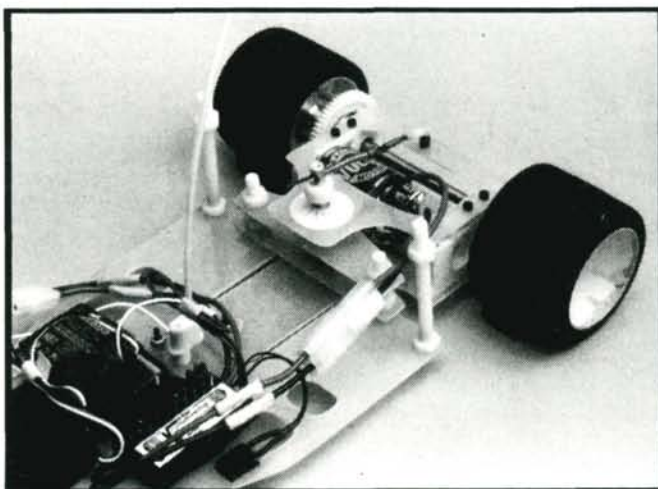
I'd been saving an MRP* GTP Corvette body for a project like this, and it was given the trimming and preparation for painting in the usual manner. Floquil* paint was mixed with their Dio-Sol



With body removed, the convenient use of a 7.2V Flat Pack is welcome. Losi stock motor was a very strong performer. Ten-tooth pinion makes for good braking and acceleration.

Tamiya* servo-saver tied the linkage to the servo, and was adjusted according to the instructions. Because the handling of this car is well-balanced, C&M suggests using as little movement as possible.

The rear-end assembly is next and, along with Associated axle/motor blocks, it uses several fiberglass parts to construct the unique flex plate and adjustable suspension. A simple damping unit and adjustable friction plates are the key to this road rocket's incredible handling. A Team Losi* stock motor and a Parma* pinion gear were fitted in place, and the axle and ball diff were assembled. This unit is the smoothest diff of this type that I've ever



Unique rear suspension is part of the Cobra's secret. Intermediate damper plate (nylon adjuster bolts at each end) make the rear suspension adjustable to track conditions.

C&M MANUFACTURING

COBRA

Type On-road racer
Scale 1/10
Sug. Retail Price \$149.95

DIMENSIONS:

Overall Length Approx. 18 inches
(varies w/body not incl.)
Width Approx. 9 inches
Height Approx. 4 1/2 inches
Wheelbase 10 3/8 inches
Front Track 8 3/8 inches
Rear Track 8 3/8 inches

WEIGHT:

Gross (w/bat.) 3 pounds
Balance (f/r) 45/55

BODY:

Type MRP GTP Corvette (not incl. in kit)
Material Lexan

CHASSIS:

Type Pan w/T-plate
Material Epoxy fiberglass sheet

DRIVE TRAIN:

Type (prim./sec.) Spur gear
Differential(s) Ball (adj.) diff

SUSPENSION:

Front: Type King-pin
Dampening Coil springs
Rear: Type T-plate
Dampening Damper and friction plates

WHEELS:

Front: Type Plastic spoked
Dimensions (D/W) 2x1 inches
Rear: Type Plastic spoked
Dimensions (D/W) 2x2 inches

TIRES:

Front Sponge
Rear Sponge

ELECTRICAL:

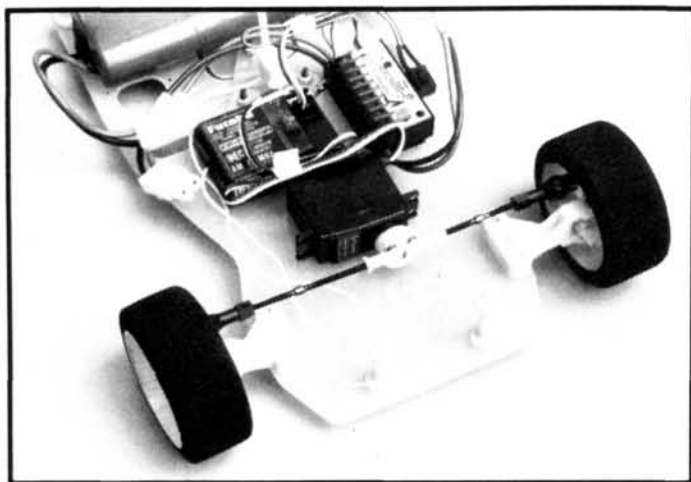
Motor Team Losi stock (not incl. in kit)
Battery Required 6-cell saddle or stick pack
Speed controller Suggested electronic (used Victor)

OPTIONS AS TESTED:

Futaba Magnum Jr. radio/Corvette GTP body (MRP)/Team Losi motor/Victor speed control.

COMMENTS:

This car is *hot!* Gives such superior handling that added confidence alone will make you a better racer. Incredibly smooth, highly adjustable differential. Accepts either saddle pack or 7.2V flat pack. Body-mount screws are very difficult to remove.



Simple and rugged front end is of Associated 12L components. Du-Bro hiem joint and turnbuckle adjusting rods were added.

thinner and some automotive flex agent. The body was sprayed black, silver, and white, with red trim, like the full-scale car driven on the IMSA Camel GT circuit by Sarel Van Der Merwe. The "Good-wrench" lettering was cut by hand from Top Flite* MonoKote white trim sheeting, and the "Performance Parts" is Coverite* Graphics lettering with a border of white MonoKote. Some miscellaneous decals finished the job, and the body was lowered onto the Cobra chassis. Now for the fun part!

I took the Cobra to Island Hobbies Raceway in Islip, NY, for some track testing and to compare it with other,

great), and goes like crazy down the straights. You'll really feel confident driving this car because you know it will go where you point it! The only change I'd make to the instructions would be where it says, "Good luck and good racing." I'd change that to read, "Now go blow their doors off!"

Editor's Note: In a conversation with Eric just before publication, he told me the race results with the Cobra at his local club the first time out. He easily made it to the A-Main where he lapped the entire field three times. He was ready to lap the second-place car for the third time, when he wisely deduced that his lead was substan-

similar cars. This indoor facility provides a consistent running surface, and fair trials are easily done. The Cobra required very little adjustment over the baseline setup suggested by C&M, and was soon hot-lapping as fast as any car I had ever run. It sticks like glue to the corners with a little traction compound (Paragon's* Ground Effects works

tial enough, so he just held his position. By the way, his on-road club has been in existence since '79, and they race all the latest 1/10-scale cars. Needless to say, everyone wanted to find out what was under the body.

C.C.

*Here are the addresses of the companies listed in this article:

C&M Manufacturing, P.O. Box 680223, Park City, UT 84068.

Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626.

DuBro Products, 480 Bonner Rd., Wauconda, IL 60084.

Futaba Industries, 555 West Victoria St., Compton, CA 90220.

MRC Tamiya, 2500 Woodbridge Ave., Edison, NJ 08817.

Team Losi, 1655 E. Mission Blvd., Pomona, CA 91766.

Victor Engineering, 24843 Del Prado, Ste. 499, Dana Point, CA 92629.

Parma International, Inc., 13927 Progress Pkwy., N. Royalton, OH 44133.

Pro Line, P.O. Box 456, Beaumont, CA 92223.

MRP (Model Racing Products), 18676-142 Ave. N.E., Woodinville, WA 98072.

Floquil, Rt. 30N, Amsterdam, NY 12010.

Top Flite Models, 2635 S. Wabash Ave., Chicago, IL 60616.

Paragon Racing Products, 8802 Knollwood Dr., Eden Prairie, MN 55344.

Coverite, 420 Babylon Rd., Horsham, PA 19044. ■

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Tail & Stop Lights #RED 20 \$19.95

Turn Lights #RED 21 \$29.95

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MONSTER DIRT CIRCLING PLEASES FANS

IT WAS A TYPICALLY hot and sunny Californian day as we at Outlaw R/C Hobbies* groomed the 180x80-foot clay oval for the weekend's competition. It was going to be a weekend of firsts for us and for the racers. This was the first ever ROAR-sanctioned *national* event for 1/4-scale cars to be run on a dirt oval, and for many competitors, it was their first time at a *national* event. At Outlaw R/C, this was our first decision to run a dry track.

Getting a handle on the track was difficult because of the weather, as during hot days, keeping the track wet is almost impossible. The track changed with every race, so we finally decided to let nature have its way and dry out the clay. This gave the racers a more consistent surface on which to race and to dial-in their cars.

With the track problem solved, the racing went off without a hitch, apart from the usual small problems that usually accompany *any* race. Problems focused mainly on the interpretation of the rules, as certain engine rules had unknowingly been violated. Dean Brown had to remove a carb spacer and Gus Gustafson had to "discuss" the legality of his combination car with ROAR officials Gary Kyes and

Jon Rahe. Other than that, there were no problems.

Three classes of races were held on the July 23-24 weekend, including Sprint Cars, Supermodifieds and Grand National Stock Cars.

Qualifying began on Saturday morning with single lap runs. One by one, the cars were timed for four flying laps, taking the best single lap for their time. This was then used to grid them into qualifying heats of up to six cars. They were then pointed on where they finished and, for each driver, the totals of three heats were added. The best seven cars, including the

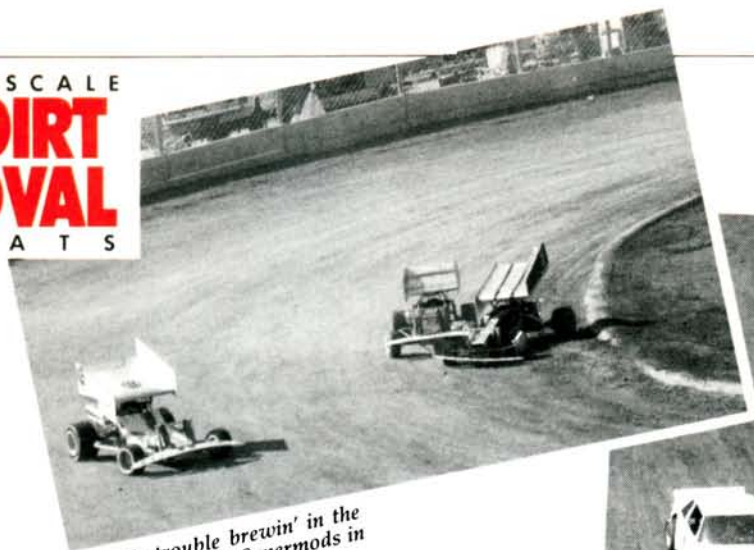
TQ in single lap runs, were seeded in the A-Main, leaving room for the winner of the B-Main to bump up to the A.

In the Supermod Class, Rick Stapleton was fastest with a 10.1-second run. Rick James ran a 10.5 in Stock Cars and George Brazil ran a 9.8 in the Sprint Car

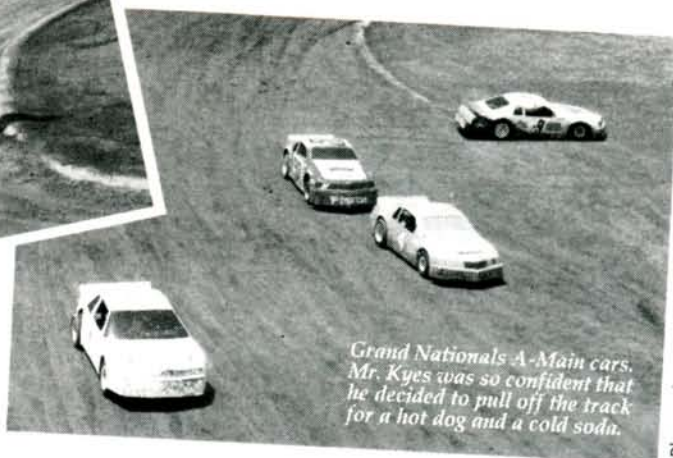
(Continued on page 48)



Bottom Row, Left to Right: Mike White, Rich James, Jon Rahe, J.D. South, Jim Wright, Joe Alves, Gus Gustafson.
Top Row, Left to Right: Joe Rogers, Gary Kyes, Tom Wilson.



There's trouble brewin' in the first turn for the Supermods in the A-Main.



Grand Nationals A-Main cars. Mr. Kyes was so confident that he decided to pull off the track for a hot dog and a cold soda.

Photos by Jerry Blake.

(Continued from page 46)

Class. This guaranteed these drivers a spot in the A-Main for their class. Stapleton was helped most by this, as there were A-, B- and C-Mains for Supermods, but only an A-Main for the Sprint Cars and Stock Cars. While the turnout seems low for a national event, one has to remember that these giant-scale R/C cars are still new and not too many people have one—yet! These cars

are the closest thing to full-size race cars, and the racing is fantastic. If you ever have a chance to see one or to see them racing, don't miss it! Our display and sale cars in the Outlaw Hobby Shop were fondled and "Oohed and Aahed" over all weekend long.

With Saturday's qualifying finished, the drivers were

(Continued on page 104)

1/4-SCALE DIRT-OVAL NATIONALS

SUPERMODIFIEDS A-Main

1. Mike White	RACO
2. Gus Gustafson	RACO
3. Rick James	RACO
4. Ray Zabriskie	RACO
5. Rick Stapleton (TQ)	RACO
6. Ralph Gould	RACO
7. Mike Cox	RACO
8. Gary Kyes	RACO

B-Main

1. Dean Brown	RACO
2. Tom Wilson	RACO
3. Jim Wright	RACO
4. Tom Cox	RACO
5. Tony Porrini	RACO
6. Jerry Bell	RACO
7. Tom Williams	RACO

C-Main

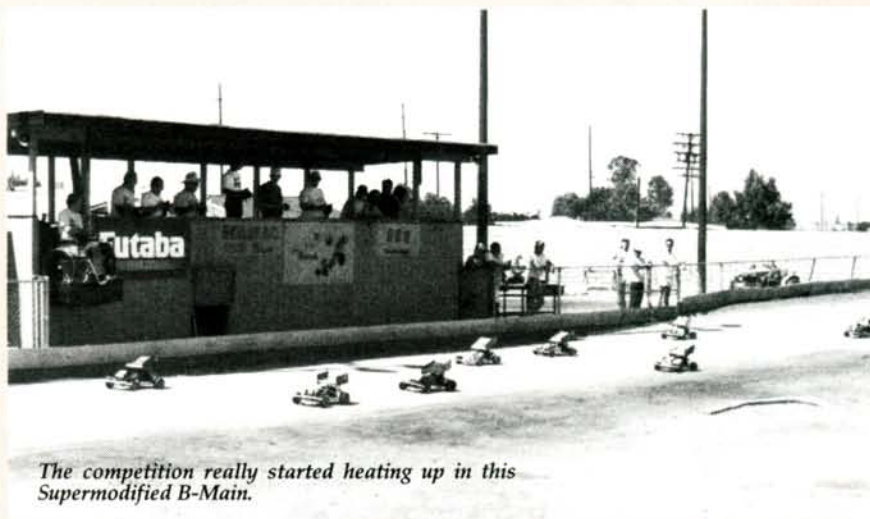
1. Joe Rogers	RACO
2. J.D. South	RACO

SPRINT CARS A-Main

1. Joe Alves	Alves
2. Gary Kyes	Alves
3. Ross Kloeber	Alves
4. Ray Luther	Alves
5. Eloy Gutierrez	Alves
6. Tom Bittel	Alves
7. George Brazil (TQ)	Alves

GRAND NATIONAL STOCK CARS A-Main

1. Gary Kyes	RACO
2. Jon Rahe	RACO
3. Rick James (TQ)	RACO
4. Mike White	RACO
5. Gus Gustafson	RACO
6. Butch Reppond	RACO
7. Paul Nadeau	RACO



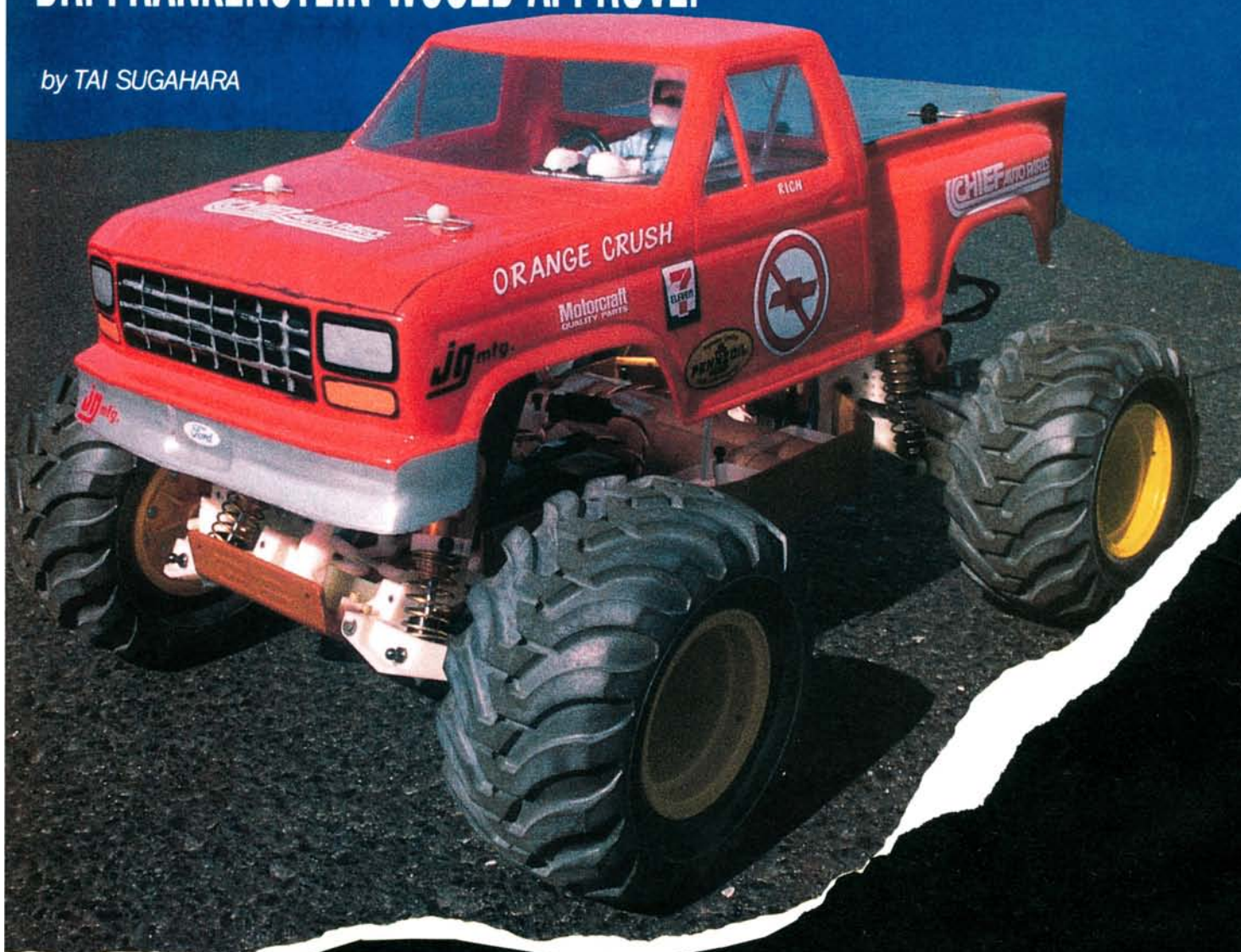
The competition really started heating up in this Supermodified B-Main.

JG

RC10 MONSTER TRUCK CONVERSION

DR. FRANKENSTEIN WOULD APPROVE!

by TAI SUGAHARA



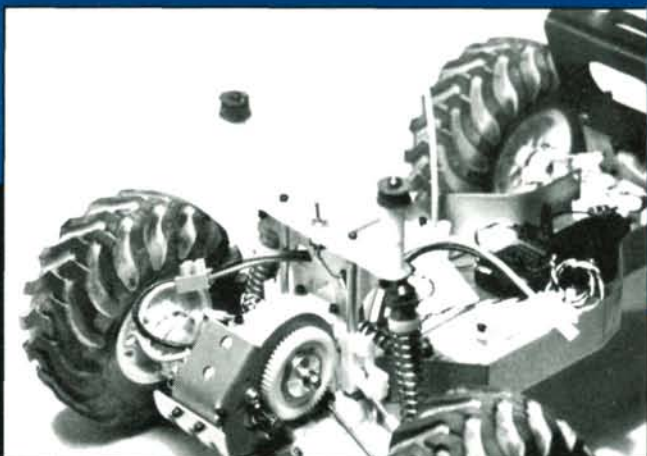
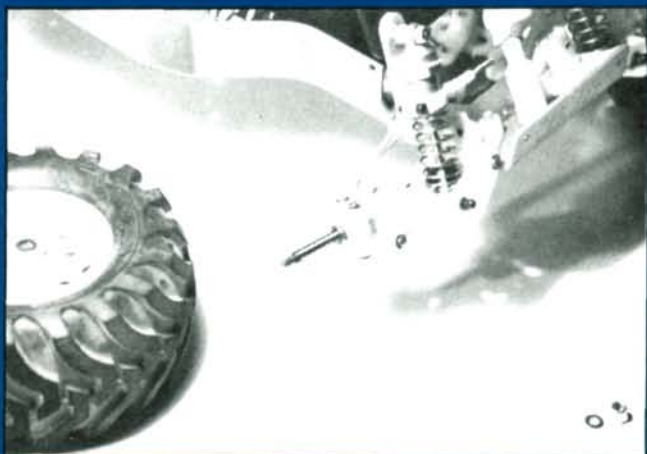
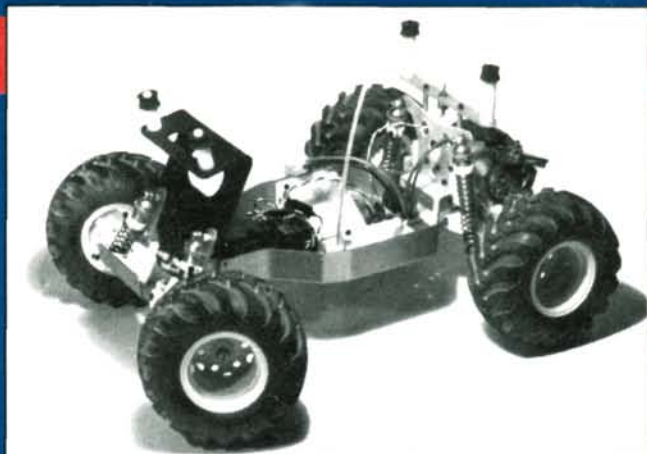
HOW MANY MONSTER TRUCKS feature fully independent suspension and have won the off-road World Championship? Can't think of one? Well, I can. The new JG Manufacturing* Monster Truck Conversion Kit turns the Associated* RC10 into a monster masher.

The kit includes front and rear body mounts, body posts, front axles and rear wheel adapters. All you need to add are rims, tires and front bearings from the MRC/Tamiya* Blackfoot or Lunch Box, and a truck body. The front body-mount bracket bolts on to the shock towers. In the rear, the stock wing tubes are removed and the new JG tubes are put in place. A bracket bolts to the top of these tubes and body posts are then attached to this fiberglass bracket. Rear-wheel adapters are used to bolt the Tamiya rims to the RC10. The standard front axles have to be removed in order to install the new larger axles. The whole conversion can be done in less than an hour.

I used Blackfoot rims and tires and a Parma* Ford F-150 pickup body that was perched high above the gold RC10 chassis. The front spring retainers were moved to stiffen the front suspension, and I installed stiffer springs on the rear shocks. These changes were made to compensate for the new, heavier tires. Because of the larger tires, a 9- or 10-tooth pinion gear is also suggested. (Using a 16-tooth pinion would probably burn up your motor or speed control.) The truck has plenty of speed with the tall tires, and the 2½ inches of ground clearance is plenty for getting over most obstacles.

The Monster Truck RC10 really handles well. If your club races Monster trucks on the off-road track, the RC10 should cart away the trophies. The fully independent suspension is the hot trick for off-road racing. For car crushing, the suspension should help keep your car from sliding off the tops of the cars; the RC10 also has the leaping ability to easily clear several cars. If you plan on using the Monster RC10 for truck pulling, I would suggest you follow the RC10 manual for locking the differential. The rear shocks should also be stiffened for pulling.

The JG Monster Truck conversion kit adds yet another facet to the multiple talents of Associated's RC10. If you're ready to do some car crushing, check it out!



Top: With the body off, it looks like an RC10 with overgrown tires, and it is!

Middle: With a longer front axle, it's easy to bolt on the Blackfoot rims.

Bottom: The JG Monster Truck Conversion includes new wing tubes for the rear body mount. Note the small 10-tooth pinion the conversion requires.

**Here are the addresses of the manufacturers mentioned in this article:*

JG Manufacturing, P.O. Box 6014, Whittier, CA 90609.
Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626.

MRC/Tamiya, 2500 Woodbridge Ave., Edison, NJ 08817.

Parma International, 13927 Progress Pkwy., North Royalton, OH 44133.

Bullet Racing Products



* Competition RC-10 Project Kit *



*1110 Project: Competition RC-10 \$134.95

- Graphite Chassis • Graphite Shock Towers • Graphite Trailing Arms (with adjustable castor and camber) • Trinity Swingshafts • Motor Heat Sink

*1111 Project: Competition RC-10 1/2" shorter \$134.95

- Graphite Chassis • Graphite Shock Towers • Graphite Trailing Arms (with adjustable castor and camber) • Trinity Swingshafts • Motor heat sink

MIP Transmission \$84.95 with kit only

*1025 Project: Competition Ultima

- Graphite Chassis
- Graphite Shock Towers
- Graphite Trailing Arms (with adjustable castor and camber)
- Trinity Swingshafts
- Heatsink Motor Mount
- MIP Transmission

*1026 Project: Competition Ultima 1/2" shorter

- Graphite Chassis
- Graphite Shock Towers
- Graphite Trailing Arms (with adjustable castor and camber)
- Trinity Swingshafts
- Heatsink Motor Mount
- MIP Transmission

MIP Transmission \$84.95 with kit only

1000 Optima Mid Stretch Kit 64.95

1001 Optima Mid Stretch Kit with Saddles 69.95

1002 Optima Mid Graphite Chassis Std. (upper and lower) 54.95

1004 Optima Mid Graphite Shock Towers 12.00

1005 Optima Mid Heat Sink with Motor Mount 19.95

1006 Optima Mid Skinny Front Wheels 5.00

1020 Ultima Graphite Chassis Std. 54.95

1021 Ultima Graphite Chassis with Saddles 54.95

1022 Ultima Graphite Chassis Sprint 44.95

1023 Ultima Graphite Shock Towers 11.95

1024 Ultima Heat Sink with Motor Mount 19.95

1100 RC-10 Graphite Chassis Wide 54.95

1101 RC-10 Graphite Chassis Std. 54.95

1102 RC-10 Graphite Chassis with Saddles 54.95

1103 RC-10 Sprint 44.95

1104 Graphite Shock Towers 11.95

1105 RC-10 Graphite Shock Towers (wide front) 11.95

1106 RC-10 Heat Sink (fits standard mount) 7.95

1109 Graphite Velcro Angles 2.25

1201 Schumacher Cat Graphite Chassis with Saddles 45.95

1202 Schumacher Cat Heat Sink with Motor Mount 19.95

1300 Yokomo C4 Graphite Chassis 54.95

1301 Graphite Backbone 9.50

1302 Yokomo C4 Replacement Lexan Belly Pan 10.95

1022 Optima Mid Lexan Belly Pan 10.95

1203 Schumacher Cat Lexan Belly Pan for Saddles 10.95

7066 Trinity RC-10 Universal Shafts 24.95

New Motor Spray 20 oz. 5.50

Prices subject to change without notice.

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CHEVY SUNDAY

(Continued from page 38)

finished third.

The 150-lap Winston Cup Main was the highlight of the weekend. The crews figured their cars could only run 100 laps on a tank of fuel, and some cars couldn't even make 75 laps without stopping to refuel. Ralph Burch, Jr. had his car set up nearly perfectly; he ran a smooth, consistent line, lap after lap. By the time he stopped for fuel, he had a commanding lead. After the pit stop, however, his car was noticeably slower than the rest of the field, but by running clean, he was able to hold onto the lead and brought the car home to the checkered flag. Mike Johns of Michigan drove his RACO car to second place in the feature from the tenth starting spot. Steve Quartermouse finished third, driving a WCM car.

By the way, the problem with Burch's car was traced to his pit crew. Burch's supermodified and sprint cars ran on alcohol, while his stock car used gasoline. It seems the pit crew grabbed the wrong fuel bottle and filled up the stock car with alcohol. Oh, well—he still picked up a check for \$1,100 at the end of the day!

All the drivers stayed around for the awards ceremony; it seems there was a lot of interest in the \$7,700 throughout the entire weekend. I hear that next year's Midwest Championship will be an even bigger event with a larger purse. Be sure to watch for that one!

**Here are the addresses of the companies mentioned in this article.*

WCM Corp., Rt. 2 Box 207A, Buffalo, TX 75831.

RACO Model Craft, 1400 E. St. Andrews Place, Santa Ana, CA 92705.

Auto Engineering, 102 Pebble Brook Dr., Clinton, MS 39056.

Alves, 530 Reed St., Santa Clara, CA 95050.

BoLINK R/C Cars, 420 Hosea Rd., Lawrenceville, GA 30245. ■

SCOPING OUT

(Continued from page 22)

transmitter and receiver used are by Futaba.

Every controller is tested with a battery voltage of 6V and a motor current of 12 amps. In this test configuration, the VIC-4A had a voltage drop of .1 volt. Using a 7.2V battery, the motor would only see 7.1 volts at full throttle, if the motor was drawing 12 amps. The voltage drop across the VIC-4A will vary according to the motor load it has to drive. The more current the motor draws, the larger the voltage drop across the controller will be.

Alignment of the VIC-4A to the trans-

(Continued on page 54)

Dico® Miniplex® Miniature Precision Power Tools

Smaller and lighter weight than any other power tool on the market today. **No. 710B Power Tool**—Weighs only 4 ounces! Speed 14,500 RPM with 20 watts of power. Ideal when working with very delicate and precise work.



#908 Dico® Miniplex® Action Kit portable precision tool kit box.

- Storage unit for #710B miniature power tool
- Nine (9) starter accessory tools
- Box takes 8 "C" batteries, conventional or rechargeable
- Will get over 10 hours of continuous battery life
- Can be used either on a workbench or attach to your belt
- A one year home use warranty



#700 Dico® Miniplex® Power Tool Kit

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SCOPING OUT

(Continued from page 52)

mitter is very easy, and is well-documented in the owner's manual. Adjusting the neutral pot with the trigger/stick in its neutral position will give you linear acceleration for the trigger/stick movement, and approximately 20-percent brake rate when the trigger/stick is released. It will also allow you to return to its neutral position. Adjustment of the neutral pot in a clockwise direction increases the braking rate, but adds a lot of dead space on the trigger/stick before acceleration occurs. Conversely, if the neutral pot is adjusted counterclockwise, acceleration occurs earlier in the trigger/stick movement, but braking just about disappears. Adjusting the rate pot counterclockwise turns the VIC-4A into a drag controller, i.e., for a slight movement of the trigger/stick, the controller will be fully on. By turning the rate pot clockwise, the controller becomes less sensitive to trigger/stick movement. For both of these adjustments, the braking rate remains the same.

Overall, this is a nicely constructed, well-designed unit, with only three minor drawbacks. The first concerns the BEC, which cannot be bypassed for use in a 4-cell model. The second problem is that the on/off switch for the BEC isn't labeled, so it could be left in the "on" position inadvertently and drain the motor battery. The final problem concerns the LED indicator, which serves two purposes: It's used to adjust maximum rpm, and it denotes that the motor circuit is complete. In this mode, if you leave the motor battery connected, the LED will be on until either the motor circuit is broken or the battery dies. The latter might not happen for several days, since the LED uses very little power, but you'll be surprised if you're supposed to have a fully charged battery and *don't* have one because the battery was connected to the controller and the LED was illuminated.

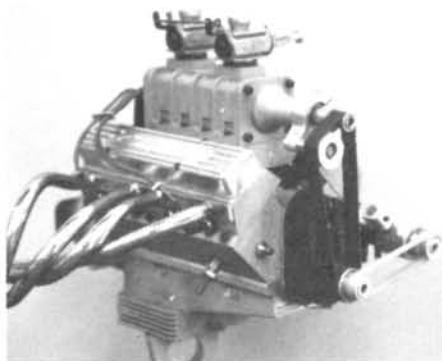
The warranty on the VIC-4A seems better than the rest. For 30 days, labor is free and parts are half price. If the unit is destroyed beyond repair in that time, you'll pay only 30 percent of list price for a replacement unit. Because of its size and weight, the VIC-4A is ideally suited to 1/12-scale models, but it can be used in all types and sizes of models.

**Here is the address of the manufacturer featured in this article:*

Victor Engineering, 19572 Waterbury Lane, Huntington Beach, CA 92646. ■

Conley V-8—Smallest V-8 Production Engine

The Conley "362" is the world's smallest production model V-8, and is now available in a rough casting kit. With the use of a Bridgeport Milling Machine and a lathe you will be able to machine the kit-provided material into a working V-8. Items included in the kit: castings (block, valve covers, pan heads, and intake), piston rings, water pump, timing belts and pulleys, camshaft lobes, injection-molded parts, wristpins, crank pins, 95% of the required metal, valve springs, screws, taper pins, dowel pins, Loctite, O-rings, and blueprints. The engine has a bore of .750 and a stroke of .625 which gives a total displacement of 36.2 cc or 2.2 ci and weighs approximately 5 lbs. It measures approximately 6" long, 4" wide, and 7 1/8" to the top of the carbs (when optional supercharger housing is used). There is an operating rpm from 2,000 to 12,000. Perfect for 1/4-scale cars and boats.



Total price, including shipping and insurance \$459.00

Optional items:

Supercharger Intake Manifold (nonfunctioning), including pulleys and belt \$49.95

Ball Bearings (11 required) \$108.00

Blueprints (Will be credited toward engine purchase; engine cannot be made from blueprints alone.) \$40.00

Illinois residents add 6 3/4% sales tax. Make checks (money order, cashier's or certified checks) payable to:

**Conley Precision Engines, Inc., 820 Ridge Ave., Suite G
Lombard, IL 60148 (312) 953-8882**

BOOMERANG

(Continued from page 27)

channel pistol-grip radio by Aristocraft*. This economical radio costs less than \$65 for a set and has servo reversing, electronic trims, adjustable trigger, LED light power meter, a compact 2-channel receiver with BEC, and two heavy-duty servos. I prefer pistol-grip control over sticks, as I find it more natural and comfortable to handle.

In testing our Boomerang, we went through eight 6-cell Sanyo battery packs. Three drivers took turns at driving the car, and it handled well over the jumps and on the oval course. But this is where the project stops being a stock kit car. After these eight runs, the nylon plastic bearings in the wheels and inside the differentials had virtually worn out! In fact, the wheel bearings were so bad that we couldn't maintain a straight line on the track. Excess play in the bearings caused the tires to wander. Time for modifications.

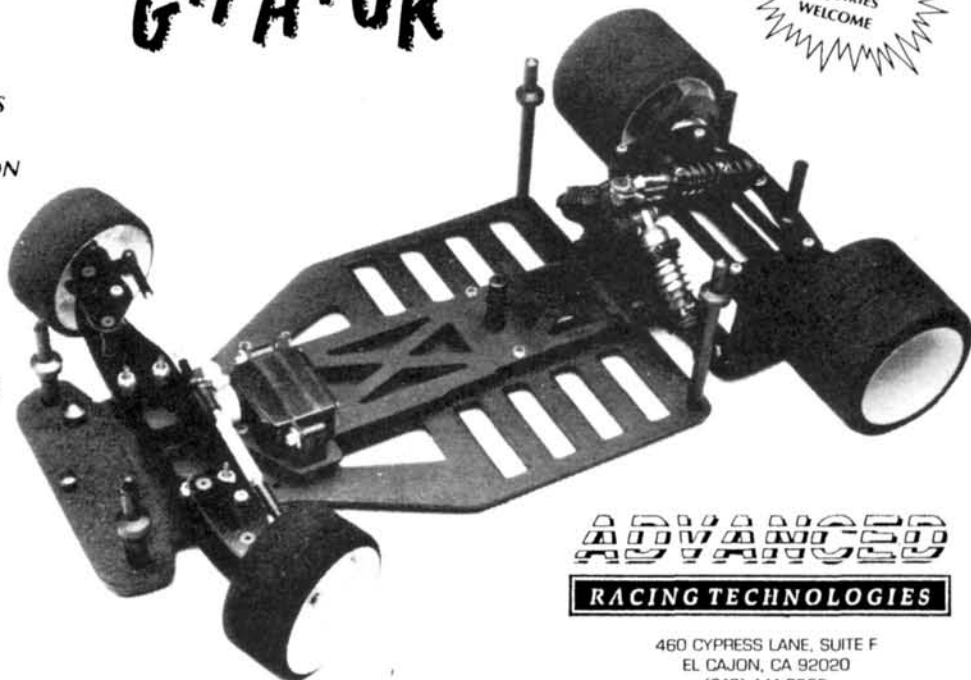
Our first mod will be the bearings; a must, since the kit bearings disappeared after only eight runs. We used ball bearings from Aerotrend* that were made just for the Boomerang. Aerotrend packages bearing kits for many of today's kit cars,

(Continued on page 58)

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BOOMERANG

(Continued from page 56)

and these are top-notch, high-quality ball bearings. All the wheel bearings were replaced, as well as all of the transmission bearings for the front and rear trannys. The handling was restored and overall drag was reduced on the drive train, resulting in longer running times and higher speeds. The cost is around \$40, making this the most expensive part of this project.

Speaking of higher speeds, we were about two seconds behind the competitive cars on the track. Note that most of the cars that I refer to are already modified and some bear no resemblance to their original state. In order to increase speed, I replaced the RS540 Mabuchi motor with a Monster Stock motor from Trinity*. Trinity's name has been around the winners' circle for some time now, racking up hundreds of wins across the country. The Monster Stock motor is an excellent choice for the Boomerang because it features a lot of torque and excellent top-end power; just the ticket for a 4-wheeler. This motor slips right into place and the cost is \$28.

Tamiya provides good performance and maintenance tips, along with some

(Continued on page 60)

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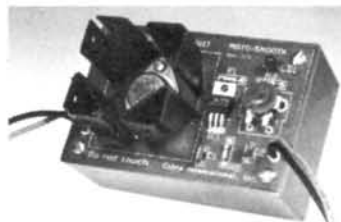
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BOOMERANG

(Continued from page 58)

equipment to keep the car in good running shape. One of the parts that will need replacing is the motor cover that keeps the inside of the motor clean. Normally, Tamiya uses a large rubber cover, commonly called the motor sauna. This little rubber boot does a good job of keeping out the dirt, but it retains the heat from the running motor. Unfortunately, the heat is as bad (or worse) than the dirt, and can result in a ruined motor.

The remedy for this motor dilemma was a foam rubber motor cover from Parma* that allows plenty of air flow to cool the motor. It also effectively stops dirt and dust from getting into the motor. The cost is around \$5—cheap insurance that provides protection without damage.

Depending on the stock Tamiya speed controller to control our new-found horsepower left something to be desired. This speed controller has three speeds forward (and reverse), but no brakes, and has a hot set of resistors on the top of the car.

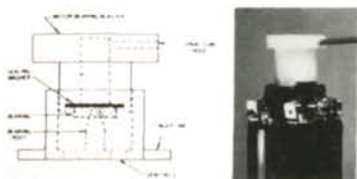
The solution was a multi-banded resistor speed controller for about \$20 from BoLINK*. This simple unit uses a large multi-band resistor with wiper arm. It attaches to the servo with double-sided tape, and the wiper simply mounts to the servo-output arm. This controller has at least a dozen stepped speeds in forward, plus adjustable brakes. There's a reverse switch at the end of the brake band for a full-power burst of reverse speed. The result is a controller that has a smooth power band for acceleration and provides precise power control in tight corners or in accelerating turns. The brakes allow deeper turns and faster cornering.

The last modification was the addition of Du-Bro* adjustable tie rods and ball links, costing less than \$5. The kit tie rods are strong enough for the job, but these rods require that you first remove the ball link before adjusting. The Du-Bro tie rods are threaded to allow adjustment without removing the tie rod. Simply adjust them while on the car.

So what did all this do? I found the Boomerang to be very free rolling. Both axles turn easily with the ball bearings and create a low amount of friction. The wheels were tight to the spindles, providing a solid steering feel. Now back to the track.

On the track, the renewed Boomerang was a boomer indeed. The Trinity motor combined with the Aerotrend bearings resulted in better track times. We could also gear up a bit, this time to a 16-tooth pinion. The results were amazing, as you

(Continued on page 98)



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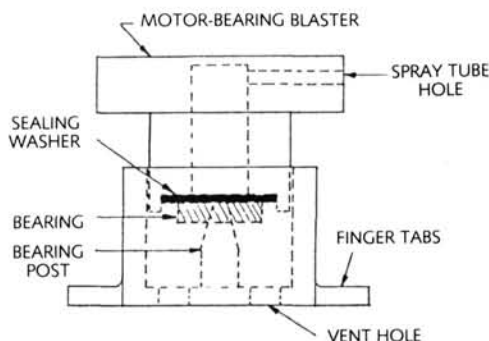
by FRED MURPHY

TOOLS AND TRICKS OF THE TRADE

THE PITS AT ANY racing facility can be an educational experience if you watch what the other racers are doing in between runs. Stroll around sometime and take a look at some of the great items that other race-car drivers are using. I did just that recently and would like to share some of the tools and tricks of the trade with you.

One racer had a very unique-looking device attached to all of his battery packs called the Battery Bug from Cobra International*—an electronic discharger and conditioner for your battery pack. As you know, routine battery discharging is recommended by most manufacturers, and we all have our preferred method. The major problem with discharging is determining the best method, but Cobra International just might have the solution. Many of the battery manufacturers agree that total discharging of a pack can cause damage to cells. This means that when a battery with flat cells is recharged, it won't charge all the cells equally or to full capacity. The Battery Bug addresses this problem by slowly discharging the pack to a pre-determined level of 1.2V and automatically switching to a mode that maintains the pack at that level until it's ready for recharging. If you leave the Battery Bug attached (highly recommended by the manufacturer), within 24 hours the indicator light on the Bug will go out, letting you know your battery is ready for a race. Maintaining a low level of current in your pack's cells will keep them in a charge-ready condition to deliver maximum performance when you need it.

Off-road racers in particular are concerned with bearings becoming contaminated with dirt and dust. I've never been able to completely protect bearings from becoming clogged with dirt, and this



Cheetah Racing's Bearing Blaster Plus will serve a dual function. Motor end bells or single bearings.

includes motor bearings. They need to be cleaned to prevent binding and a shortened life. The traditional shot of motor spray or WD-40 cleans the surface; but what about that dirt that gets deep inside the bearings? Close observation of pit activity revealed some solutions to this problem. The first device, called the Bearing Blaster Plus from Cheetah Racing*, enables you to quickly and efficiently blast the dirt out of your bearings, with the exception of bearings that are 16mm or larger. This pocket-size unit lets you clean your modified motor bearings

with two or three short bursts of motor spray, and it will even fit on the new Yokomo* and Trinity* bell ends. Individual bearings can be placed inside the Blaster and a couple bursts of motor spray will clean them as well. Remember to re-oil any bearings you clean.

The other bearing cleaning device I discovered was the MCS* bearing washer. Also a pocket-size unit that's made from aluminum and stainless steel, it will clean individual bearings up to and including 16mm (which should be about 98% of all R/C bearings in use!). The bearing washer holds your bearing in place inside the washer housing as you spray motor spray or a contact cleaner to flush out any dirt. To flush all the dirt out of the bearing, the bearing washer will even allow you to rotate the bearing's inner race.

(Continued on page 66)



A great field soldering solution is now offered by D&M Alloys.



Another innovative product from Cobra, the Battery Bug, can earn its way into your field box.

Wanted:

AUTHORS CONTRIBUTORS PHOTOGRAPHERS

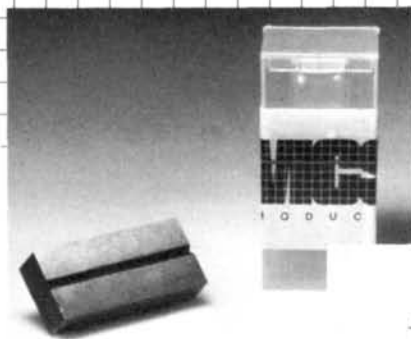


We think a lot of our readers have ideas that are worth sharing. How many times have you read an article and said "I could do that!" or "That's not the only way to do that; mine's easier!" Could very well be! Here's your chance! We'll be expanding **Radio Control Car Action** and are looking for additional contributors to help us accomplish this objective. Of key importance is the ability to take good photographs; the writing we can help you with. Interested? It's much easier than you might think.

Let's hear from you. Send in your ideas, articles, thoughts and photos; we're looking forward to it.

**CHRIS CHIANELLI
R/C CAR ACTION
AIR AGE PUBLISHING
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WILTON, CT 06897**

TROUBLESHOOTING



The dogbone / front end checked from MCS even has its own carrying case.

(Continued from page 63)

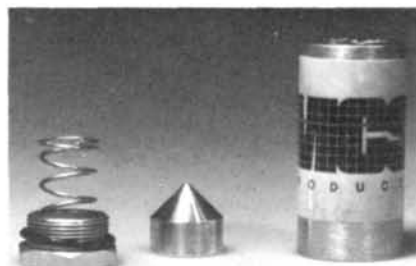
MCS Products also has another good field-box item for the R/C car racer. Did you ever bend a dog bone and have to use the "close-enough" method of straightening it while at the track? The dog-bone QC Block from MCS will solve the problem. This handy pocket item lets you roll the dog bone on one side to check straightness; use the other side to hold the dog bone in place while you straighten it. As a matter of fact, you can use the QC Block to check any part on your car for warping or unwanted bends. MCS even had the foresight to allow it to be used as a front-end check. By using the included 10-32 screw and standing the QC Block on end, the unit can be used as a caster/camber instrument. This is a quick and easy device that no field box should be without.

The other interesting items I discovered that day concerned soldering in the field without electricity. From Sky King Enterprises* comes the cordless Turbo Solderer. This rechargeable soldering iron will work for about 250 soldering joints on one charge of its two Ni-Cd batteries. The Turbo Solderer can be charged from standard 110V household current or from the 12V car cigarette plug included in the kit. It reaches temperature in about 10 seconds and even has a built-in light to make soldering as easy as possible.

The most amazing soldering I saw was being done with a disposable lighter. Miracle Weld from D&M Alloys* lets you solder with the heat of a lighter or soldering iron. The product is a silver-bearing solder paste that adheres to just



Soldering in the field with the Turbo solderer is quick and easy.



MCS bearing washer will service about 98 percent of the R/C bearings in use.

about any metal you can think of. It's also a quick and easy way to do field repairs to wires that need soldering. Now you don't have to worry about a soldering iron in the field; all you need is a lighter and Miracle Weld.

These are only some of the tools and tricks being used and I'm sure if you look around the pits you'll find more. Let me know what you discover and maybe we can help lighten the load for our fellow racers. Good luck, and happy motoring!

**Here are the addresses of the companies mentioned in this article:*

Cobra International, 1235 Lowery Dr., Norfolk, VA 23502.

Cheetah Racing, 10823 Amestoy Ave., Granada Hills, CA 91344.

Trinity, 1901 E. Linden Ave. #20, Linden, NJ 07036.

MCS, 502 Price Dr., Lewistown, TX 75067.

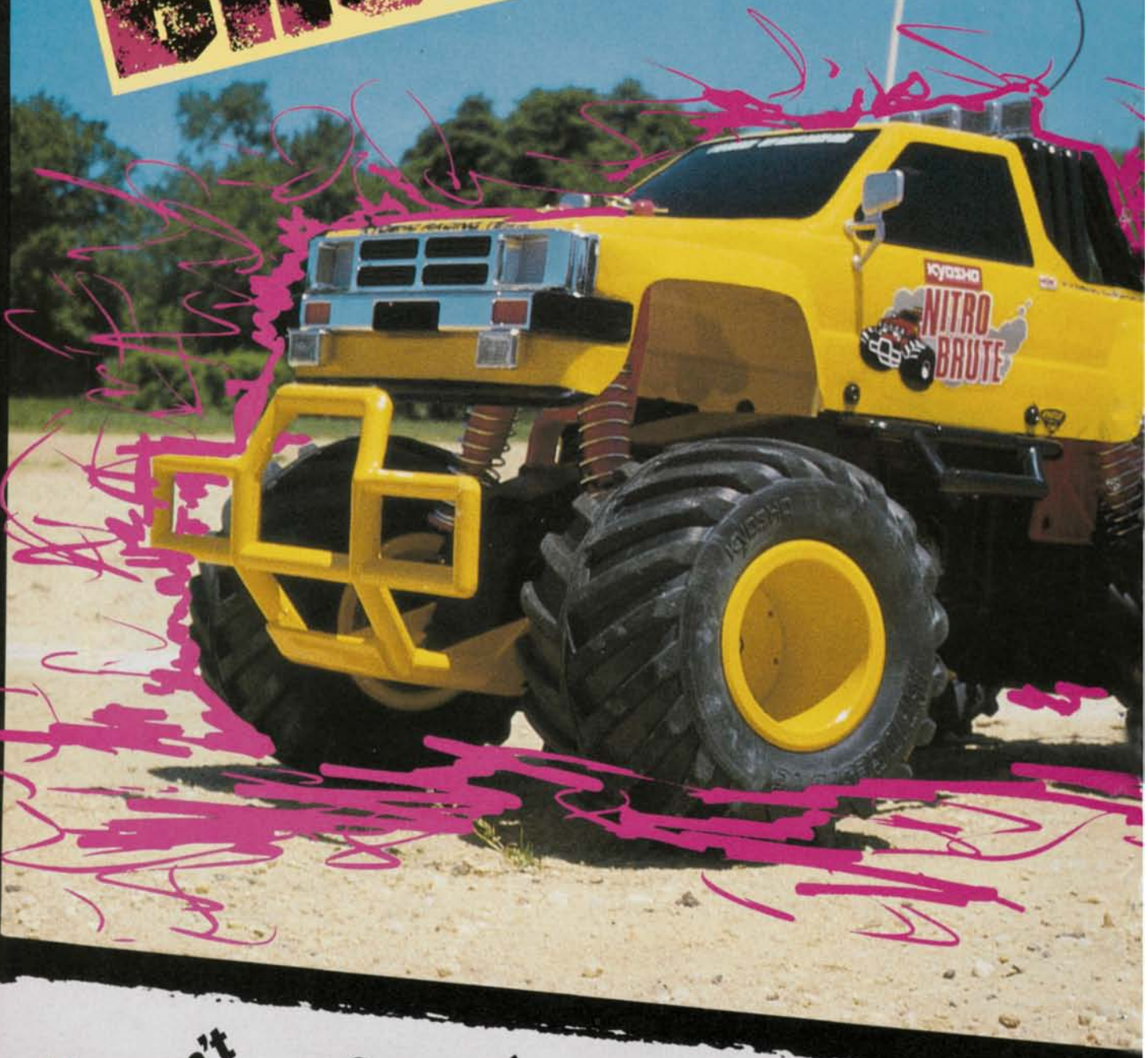
Sky King Enterprises, P.O. Box 23942, Milwaukee, WI 53223.

D&M Alloys, 4704 Ecton Dr., Marietta, GA 30066. ■

Track Report

NITRO BRUTE

COUSIN OF THE HUM



We don't

need no

stinking

chargers!

by JOE BRUNI

UNGOUS!

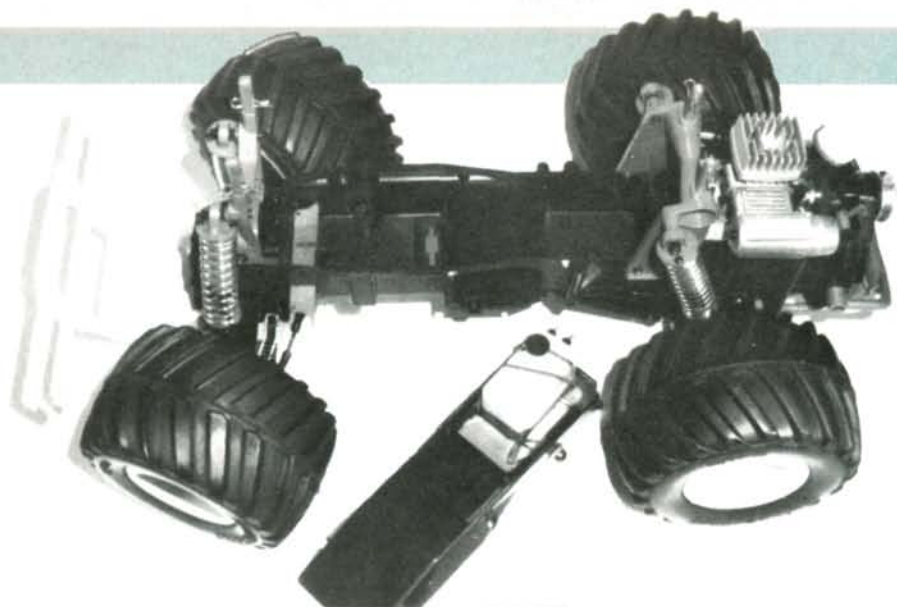


THE RECENT SURGE in popularity of weekend R/C truck-racing events has produced an increased demand for more powerful machines. Kyosho's* innovative engineers have created the Nitro Brute, which produces power that electric-powered trucks just can't deliver.

The Nitro Brute is the latest off-road machine to be released from the monster-truck division of Kyosho. Essentially, the Nitro Brute is a clone of the electrically powered Big Brute with the addition of a rear-mounted 2-stroke glow engine. The bathtub-style main frame, composed of durable, lightweight resin ABS plastic is capped off by an easy-access cover and see-through hatch, which also provides a dust-free compartment for the radio gear. Both the front and rear suspension systems are composed of heavy-duty upper and lower A-arms and nylon ball links. Even the brass ball-joints are larger than the industry's standard size. The Nitro



The Schneurle-ported, ABC O.S. .12 CZ-2 engine is included in the kit.

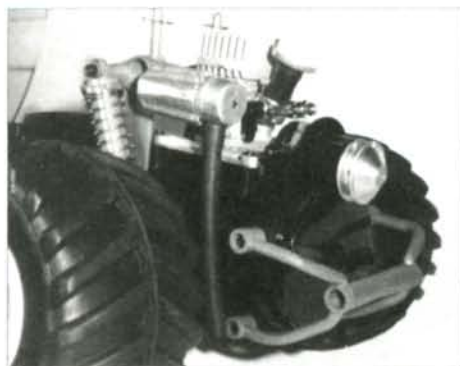


Above: Fuel tank is mounted in its own tray in the upper half of the chassis, not yet screwed into place. Left: Lower chassis with same suspension components as the electric Big Brute.

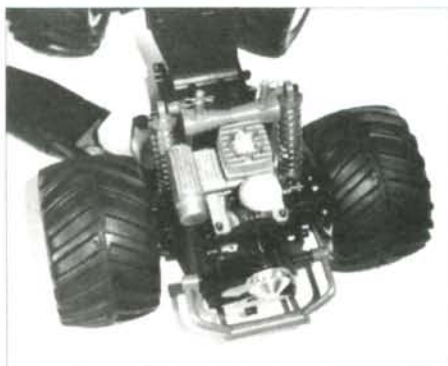
Brute has both front- and rear-axle toe-in adjustment capabilities. This is an important advantage in sled/truck-pulling events, because the force of the pull is directly centered at the rear axle and suspension system, which requires frequent adjustment changes depending on the weight to be pulled.

Included in the kit is an O.S. Max CZ-2 gas engine, which not only provides the power to pull almost any load, but revs out high rpm for an impressive top end. (Remember: To prevent loose screws, bolts and nuts in your engine, use a good-quality thread-lock material.) The engine is bolted to a metal engine pod that lies perpendicular to the rear axle just above the rear differential system and provides extra rear-end weight for added traction. Incorporated onto the engine's shaft is a unique centrifugal clutch and braking-system combination. The clutch is then attached to a large limiter pulley via a belt-drive. When the throttle is opened, the car accelerates as the clutch engages, but pushing the pistol trigger forward will cause a lever device to rub against the clutch bell and slow (or stop) the rear diff and wheels. The shock towers are extremely tall to accommodate the large plastic coil-over shocks. Springs were a problem in this kit: They were too soft to support the heavy rear end, and caused the Nitro Brute to sag. But the front and rear bumper systems proved to be well-designed: No matter how hard I tried to connect

(Continued on page 108)



Rear cage protects belt-drive system. Note starter cone can also be used for belt starting.



Toe-in on rear end is adjustable; shocks are too soft and also limit suspension travel.

NITRO BRUTE

KYOSHO



NITRO BRUTE

Type 2WD monster truck
Scale 1/10
Sug. Retail Price \$310

DIMENSIONS:

Overall Length 19½ inches
Width 12 inches
Height 10½ inches
Wheelbase 11 inches
Front Track 9½ inches
Rear Track 9 inches

WEIGHT:

Gross (dry) 6 pounds, 20 ounces

BODY:

Type Toyota P/U
Material Lexan

CHASSIS:

Type Monocoque bathtub
Material ABS resin

DRIVE TRAIN:

Type (prim./sec.) Clutch/belt
Differential(s) Plastic nylon gear

SUSPENSION:

Front: Type Double wishbone
Dampening Coil-over shock
Rear: Type Double wishbone
Dampening Coil-over shock

WHEELS:

Front: Type One-piece ABS plastic
Dimensions (D/W) 2½x2¾ inches
Rear: Type One-piece ABS plastic
Dimensions (D/W) 2½x2¾ inches

TIRES:

Front Rubber flotation
Rear Rubber flotation

ELECTRICAL:

Motor O.S. 12 CZ-2
Battery Required None

OPTIONS AS TESTED:

Two-channel Kyosho Pulsar radio.

COMMENTS:

Kyosho needs to address rear suspension problem. The truck is very powerful with good road speed. The main advantage over electrics is extensive running time.

RC10 TECH

PART III



By CAM & JEFF PALMER

GETTING MORE OUT OF THE REAR SUSPENSION

IN THIS ARTICLE we're going to finish up with the rear-suspension system and present some useful related topics. The hard part is over.

- **Rear A-Arm Modifications:** Prior to step No. 109, we're going to increase the depth of the "U" on the rear A-arm. This modification will allow increased movement of the rear A-arm by preventing the stub axle from hitting the rear A-arm. These modifications can be done with a hobby knife, but the quickest way to do them is with a Dremel* Moto-tool and a No. 192 routing bit. Deepen the "U" about one-eighth of an inch. Next, use a No. 30 drill bit to clear the hinge-pin holes. Work the drill bit in the holes until the hinge pins move without binding. Don't forget to clear the hinge-pin holes on the rear hub carriers.

After assembling the A-arms, they should drop and be stopped by the aluminum chassis when the car is picked up. The rear hub carrier should fall over. If you're still experiencing some binding, check the hinge-

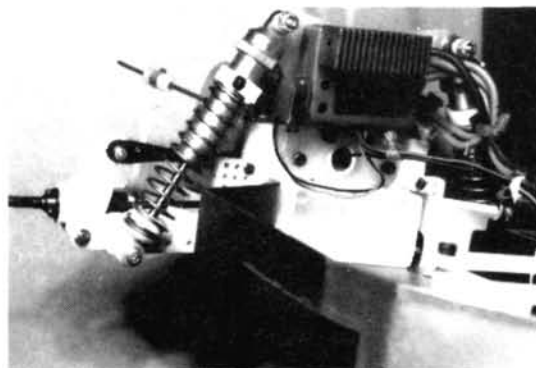
pin holes first. The nylon part should spin freely on the hinge pin. If the hinge-pin holes are OK, then lightly sand the surface areas between the nylon parts.

- **Rear Shock Tower:** Prior to step No. 142, we're going to deaden the rear-suspension action to allow it to take a harder blow before bottoming out. To accomplish this, change the angle of the shocks to allow them to absorb more of the energy of landing, but limit the action of the springs. Move the upper-shock mount hole three-eighths of an inch in

towards the center. Then use a $\frac{3}{32}$ drill bit to make the shock-mount hole. Next, attach the lower portion of the shock to the outermost hole (the hole closest to the wheel on the rear A-arm). Use the stiffer "gold" springs.

- **Rear Shocks:**

When an RC10 is new, the aluminum frame will serve as a stop for the rear A-arms so that they're parallel with the ground. After some wear, the A-arms will extend beyond parallel position



A look at the new rear shock mounting. Note the shortened rear shock mount and the use of the last hole on the rear A-arm.

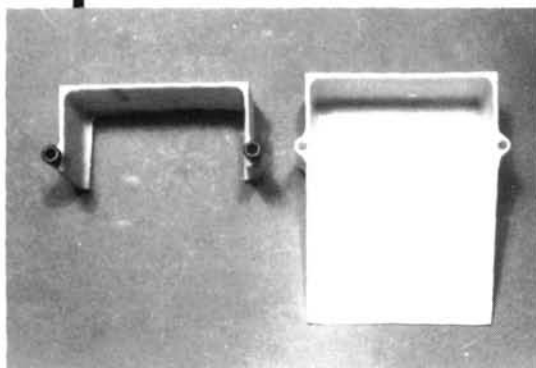
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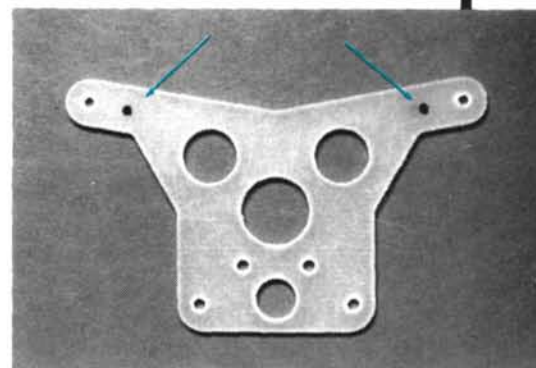
BoLINK tires for concrete and black-top racing. Grooved for better traction in the corners.



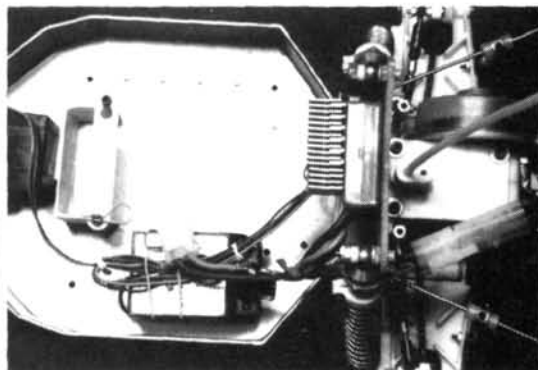
Holiday Buggy tires in the rear and Pro Line in front for dirt-oval and off-road racing.



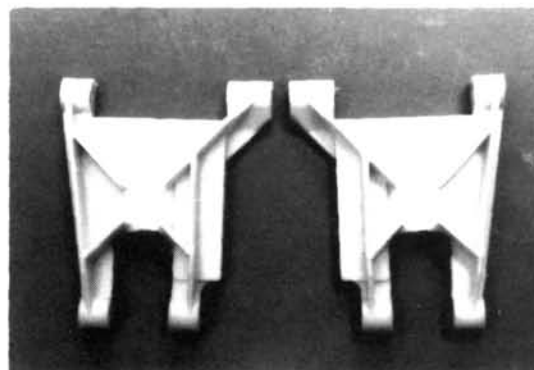
The modified battery holder. See text for details.



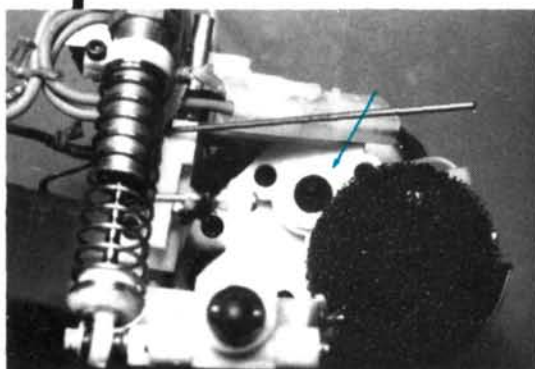
The rear shock tower. Note the drill points for the new location.



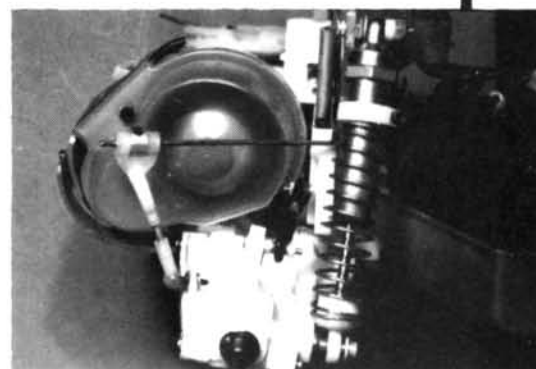
Mounting locations for the Tekin speed controller, receiver and battery holder.



Rear A-arm modification. Outer end of the arm is recessed to clear dogbone under hard compression.



Use a foam dust cover on your motor to give the motor a longer life. The top of a medicine dropper (cut to fit) makes an excellent diff shaft-bearing cover. (See arrow.)



A view of the assembled rear suspension. Note the screw and nut detail of the ball link and turnbuckle. Also note the stock diff cover with an adjusting hole drilled and plugged.

Hand-Wound

VS.

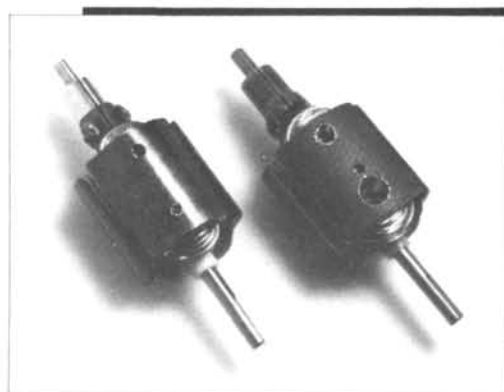
MACHINE-WOUND

by STAFF

**IT'S WHAT'S
INSIDE THAT
COUNTS—WHAT
ARE YOU REALLY
PAYING FOR?**



Photos by Steve Pond.



Far Left: Precision-cut commutator on this hand-wound Twister armature cuts down on heat caused by arcing and increases longevity and performance. That's one reason Twister does well on the circuit.

Left: Hand-wound Trinity armature required much less drilling to balance than the machine-wound Dymond armature. Large holes have detrimental effect on mass and continuity of arm.

ACTUALLY, THIS article might just as well have been called, "Why Hand Wound is Better, and What It Means to You, the Racer." In a one-on-one comparison, there really is no contest: The hand-wound is the winner. Of course, the down side of all this is the cost; to hand-wind an armature takes more time, so it costs more—around \$75 to \$80.

Don't be taken in by slick packaging. Some motors come in such beautiful containers that we forget to look inside. You should really be paying for what's going to make the car go faster, not for expensive, colorful packaging.

When an armature is hand-wound, the wires are carefully placed next to one another in an even, orderly pattern. But the machine tends to pile up the wire wherever it happens to fall. The final result is that one pole, usually the last one to be wound, ends up with more

wire than the others, and this makes the balancing job more difficult. Many problems are created when an armature has to be drilled out excessively. The larger balancing holes will cause turbulence when turning at 20,000 to 30,000rpm, and the gaping holes in the armature and poorly stacked wire will degrade the magnetic continuity and mass of the armature.

Most, if not all, of the machine-wound motors come from Japan, Taiwan, or Hong Kong. They frequently have a poorer grade of wire with a lower temperature insulation. Moreover, the winding machine tends to stretch the wire, so creating hot spots on the armature when it's running and again deteriorating the magnetic field.

Two other considerations are the epoxied armature and the solder tab on the machine-wound imports. When an arm is machine-wound, the outer wind is often completely separated and lifted away from the rest of the

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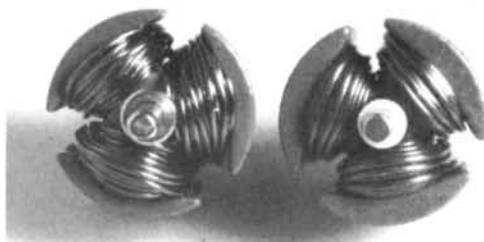
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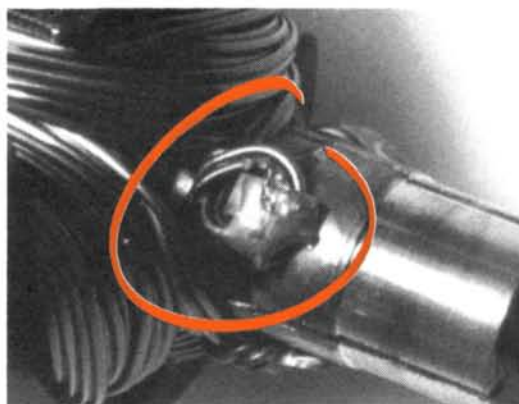
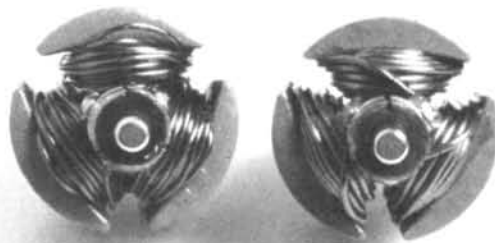
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Hand-Wound MACHINE-WOUND

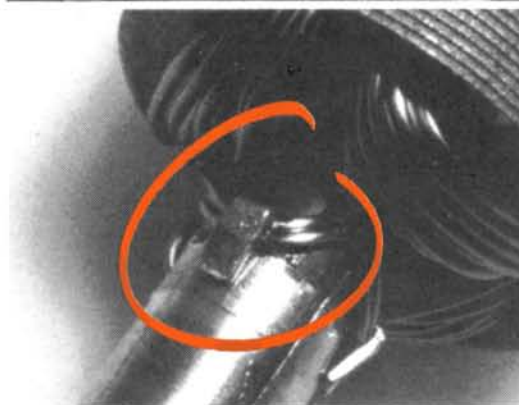
Bottom view of Tamiya
Technipower (left) and Rev-
tech 17-turn wind. Note the
orderly pattern of the Rev-
tech wire.



Same armatures as above—
this time, top view. Machine-
wound Technipower on left;
hand-wound Revtech on right. The picture tells the
story.



Note: Wire is soldered to
commutator tab—an added
bonus with hand winds.



Like other machine winds,
the wire on this Kyosho
240ST is crimped (not
soldered) to the commu-
tator tabs.

pack, so when the epoxy is applied, it can do little to secure these "loose" outer winds in place. Also, the wire isn't soldered to the commutator tabs on the machine imports; it's merely crimped in place, while the hand-wound is all soldered.

Some machine winds are better than others, but none can compare with a good hand wind. Remember, hot spots and poor balancing increase heat, and heat shortens the life of your motor and adversely affects performance.

So, the next time you're looking for a new hot wind, make sure you're not just paying for expensive containers or fancy car labels. Find out the facts—the *inside* facts! ■

WEST COAST



California
**QUARTER
POUNDERS**

WHAT A RACE! What a racetrack! It was my good fortune to attend the first-ever 1/4-Scale Nats at the beautiful new El Cajon R/C Speedway in El Cajon, CA, on July 17, 1988. Located a few minutes east of beautiful San Diego, the brand-new track was host to the event that many 1/4-scale fanatics have been waiting for—the Nats.

A few 1/4-scale racers compete in other scale classes, but most drivers are hard-core big-iron runners, and I can see why. First, these big cars have a presence that's unique to this class. They look, handle, sound and sometimes *crash* like their first cousins in the full-size world. Second, the racing is handled like a full-size event, with a yellow flag going out when there's trouble on the track, requiring drivers to hold their positions and cut the power, and a green flag to start the racing again when the track is clear. Third, the track. Specifically, this track with its smoooooth asphalt, banked 1/4-scale, 1/4-mile oval course with red-and-white guard-rail fences, grand-



1/4-SCALE NATS

by GREG NEWMAN

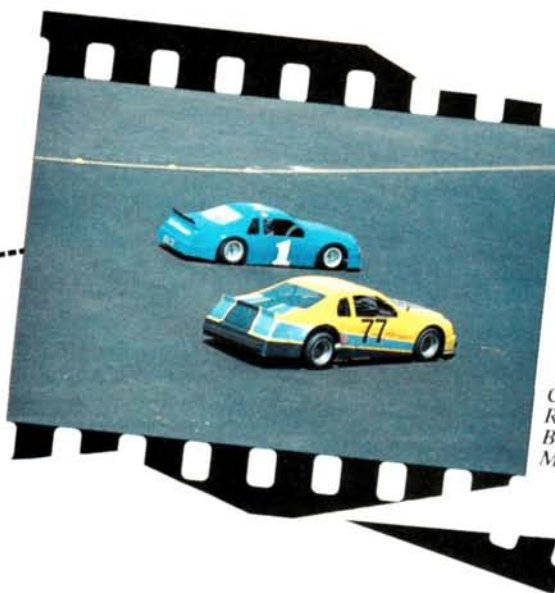
stands, elevated drivers' and announcers' boxes, lights, concessions and excellent PA system all give racers and spectators a great place for some fantastic racing.

I arrived on Sunday just before the start of the C-Main events. Qualifying had taken place earlier that morning, with practice on the previous day. It was a very warm, breezy day and, just after noon, the event was officially opened with ceremonies that included a three-plane formation fly-over. This was just the beginning of a slick, professional, well-timed day of racing.

Qualifying times were the basis of the events that each driver would compete in, with the 1st-, 2nd- and 3rd-place winners advancing to the next Main. C-Main races in Supermodified, Sprint and Grand National were all 15-lap races and were run in that order. B-Mains were 25, 20 and 30 laps respectively. The quality of driving improved somewhat from the C to the B events with crashes and mechanical problems reducing the field by about 30 percent at the checkered flag. The C-Mains were generally smaller fields, and the three drivers who just finished the heat advanced to the B-Mains. In the Supermodified Class, Steve Ballew worked his way up from the C-Main to finish 5th in the A. As you'd expect, the pace and excitement increased from the Cs to the Bs, and then increased dramatically with the onset of the A-Main events.

All racing in this 1/4-scale event had to be done with factory-production, stock machines. Any significant modification would disqualify a car, so race victories are as important to the manufacturer as they are to the driver.

The A-Mains began with the 40-lap Supermodified Class. The 10-car field consisted of seven RACO* and three WCM* chassis. Three cars went out in the first 30 laps with



Chris "RACO" Rahe laps Larry Bles in the A-Main.



The flagship of the RACO stable is this T-Bird painted specially for Mike White. (Too pretty to race with.)

mechanical problems like heat-induced vapor-lock or collision-induced disassembly. The run to the finish was dominated by Chris Rahe with his RACO (what else?). It was no cakewalk for Chris, as he and Ralph Burch Jr. traded places in the lead spot several times in the last few laps for a very exciting finish.

The A-Main Sprint race was as hot and as fast as you'd expect. The sprints are the fastest and lightest of all the 1/4-scale race cars, and just as with their full-size counterparts, spin-outs and mishaps are common. The new precision-scale Edelbrock car made it to the As under the skilled hands of Brendy Drifess, but was disabled in an unavoidable collision early in the heat. Other than the single Edelbrock entry, the field was nearly evenly split between the well-tested WCM chassis and the relatively new Alves* car. This was Ralph's event, although Gary Kyes and Steve Skellenger never let him relax. This race happened almost too fast; it seemed to be over almost as soon as it started. I can imagine how it must be to drive in this one—a split second of brain-fade and you take your car home in a Hefty bag!

The final event of this terrific day was the 100-lap Grand National A-Main—the one that I'd



Another beautiful body by Gerry Durnall. He used it on his WCM chassis in his qualifying runs only!

been waiting for. In the Grand National Class, the cars are usually about four feet long and are required to weigh 40 pounds! While the Grand Nationals aren't quite as fast as the Sprints or the Supermodifieds, they have the presence of full-size stock cars, and with the ability to exceed 50mph, they act more like the full-scale thing than anything else in the R/C car world.

The drivers were required to make one pit stop and to take on at least one ounce of fuel sometime

during the race. When a car came into the pit, the crewman had to kill the engine, add the fuel and then restart the car—all in a matter of seconds. As far as I could see, there were never more than two cars in for a fuel stop at any time, making for a very smooth operation.

With the pit-stop requirement, it was sometimes difficult to know who was in the lead at any time after the halfway mark.

Although there were quite a few bumps and a few spin-outs, nine out of 10 cars finished all 100 laps. Unfortunately, Jon Rahe was forced out early with a fuel-vapor lock.

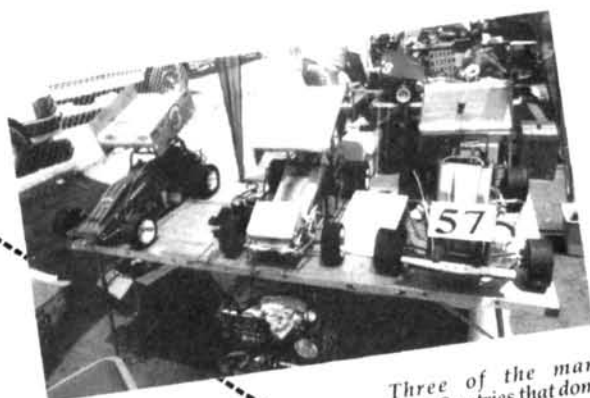
This race was just like Daytona or Talladega in that the last few laps were *really* exciting. There was a



These guys look as though they might be contemplating a joy ride.

neck-and-neck battle for the lead between Chris Rahe and Gary Kyes, both driving RACO cars. These guys really brought the crowd to its feet with their bumper-to-bumper performance, but, once again, it was smiling Chris Rahe at the checkered flag. A perfect end to a perfect day of auto racing.

Our compliments and appreciation go to Jack Roland and Norm Sullivan, operating partners of the El Cajon R/C Speedway, as well as



Three of the many RACO entries that dominated this event.

to all the dedicated people who spent their nights and weekends turning a patch of open land into one of the finest R/C racetracks in the world in four very short weeks. Turn to page 143 for the race results.

**Here are the addresses of the manufacturers mentioned in this article:*

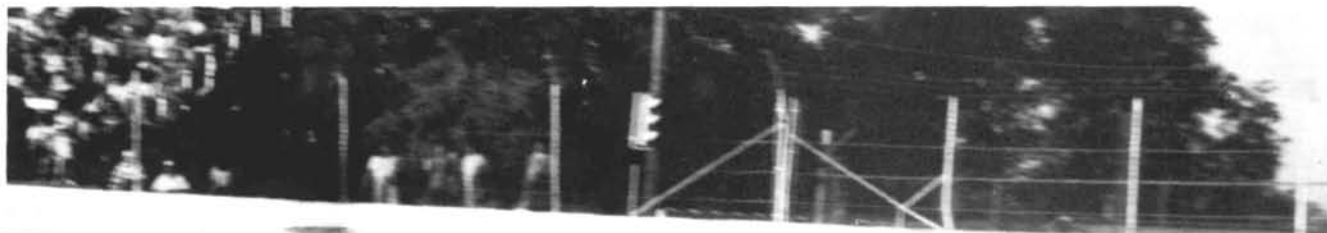
RACO Model Craft, 1400 E. St. Andrews Pl., Santa Ana, CA 92705.

WCM, Rt. 2, Box 207A, Buffalo, TX 75831.

Alves, 530 Reed St., Santa Clara, CA 95050.

The Pole Position

by RICH HEMSTREET
STANDARDIZING CONCOURS RULES



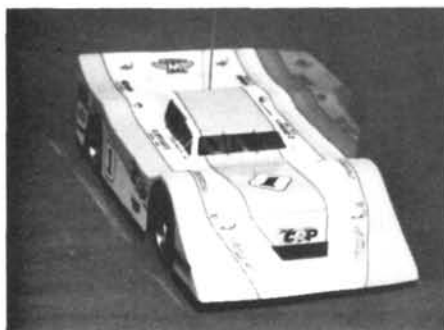
Full-size Canadian Coupes could easily be recreated by using classic car bodies, like the ones available from BoLINK and Parma.

MOST MAJOR RACES I attend have one thing in common: An argument will always start over the Concours competition. There doesn't appear to be any nationally accepted system for running Concours.

Some race directors think that the top three Concours cars must race those bodies in the Mains. Others believe that because the racers put so much work into the cars, they shouldn't have to run them at all, which is why the same cars show up race after race for Concours. At some events, there are both true scale Concours and Best Paint. However, in most events, all the cars are judged together.

Many questions have been raised: How many cars can one person enter? Can people who aren't racing enter Concours? What about the person who prepares three or four bodies that other drivers enter? Is the Concours award supposed to go to the owner of the body, or to the person who did all the work? Do true scale entries always need a photo for verification? What about entries that include trailers and tow rigs?

The main question is what is the purpose of Concours? It must be determined whether it's strictly a test of patience and resourcefulness, or a way of helping spectators identify our racing with full-scale racing. If we're simply



A detailed interior helped this car do well in Concours, although more time is obviously needed to create it. Maybe that's why the judges thought it deserved more points.

going for more detail in a few cars, we might as well open Concours up to model kits and forget the radio-control end—especially if the drivers don't even have to prove that their cars work on the track! Requiring drivers to run in the mains with the same full trim that was used during the Concours may reduce the number of Concours entries. Obviously, that's not the way to go. There should be some middle ground that will benefit R/C racing and maintain interest in Concours.

I believe all Concours cars should be able to run around the track, exactly as displayed for judging. In fact, no trophies should be awarded until the cars demonstrate their track-readiness. This doesn't mean they have to travel at racing speeds; they just have to run. All Concours

entrants should have to race their bodies in the Mains, but it should be *legal* to remove detailed interiors and fancy wheels and tires! If the car needs to have a wing added, it should be a clear Lexan type, so it doesn't detract from the car's looks.

To improve the appearance of all cars on the track, a realistic-looking driver should be required in all classes of racing. The drivers must be securely attached in a proper driving position. That means no back-seat drivers, except in funny cars! Concours cars that remove detailed interiors would have to re-install a driver figure. Also, I suggest that all Donald Ducks, Gumbies and other characters not be allowed on the track. If Bill Elliot wins the Daytona 500 with a two-foot-tall Gumby bolted to his roof, I might change my position. Until that time, let's stick to scale racing cars.

(Continued on page 86)



Gordon Zito didn't have to drive this Concours winner around the track, but he told me that he could.



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POLE POSITION



Above: After taking 3rd in Concours, Chuck Massey went on to race this car in the Mains. Below: This car was a Concours runner-up, and went on to win the 150-lap Main.



(Continued from page 84)

NASCAR won't let a car start a race if it's in bad condition. R/C racing bodies are relatively inexpensive. If you can afford to travel to a major race, you should be able to prepare a new body for it. With proper decals and a Sharpie black marking pen, even factory pre-painted bodies can become sharp-looking race cars.

Only drivers who are racing should be permitted to enter Concours. How else could the car compete in the Mains? Each driver should be permitted only one entry, and racers should only enter cars they've prepared and painted. Trailers and tow rigs may be great-looking, but I don't think many drivers would want to use them in the Mains.

Using a photo to verify the true scale entry works both for and against the Concours entry. At one Concours I judged, there was a Polaroid photo of Richard Petty's famous No. 43 STP car. It was obvious to me and to the other judges that the color balance was way off. The

(Continued from page 84)

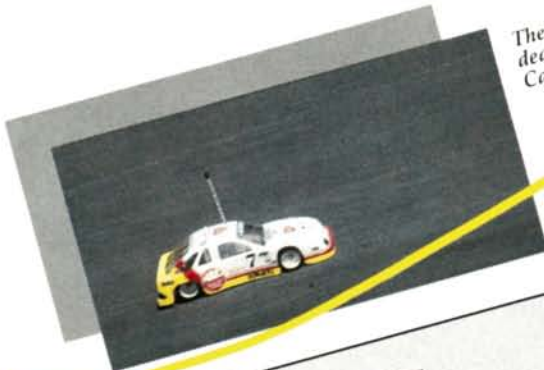
photo made Petty's car appear to be a blue and greenish bronze color. The scale model duplicated this color faithfully, but the color scheme of the full-size racer was baby blue and red. The photo was probably taken under fluorescent lights without a flash, and this changed the color. (The car didn't win.) Sometimes an exact body style isn't available, so the entry is hurt by a photo that emphasizes the differences. If a model looks better with less detail, a driver shouldn't provide a photo. Concours entrants should be given the option of including a photo, and if they feel it will strengthen their entry's chances of winning, they should do so. If they believe they can better convince the judges without a photo, let them try.

One final Concours thought: I think every car should compete against all others—no special Best Paint Class should be included. When was the last time you saw a full-size race car covered with air-brushed murals? Maybe the mural cars could help themselves in Concours with a photo of the real race car as proof. Otherwise, I think the race-car replicas and those that look like they could be real race cars should carry home the Concours trophies.

Recently, I saw a full-scale race of old-time coupes at my local track. A club from Canada runs these cars under the label "Canadian Coupes." They use sheet metal from cars with straight-six motors, dating back to the 1930s. The cars run without fenders and use narrow street-legal tires. The cars aren't super fast, but they put on a great show. With all of the classic R/C bodies available, it might be fun to duplicate this racing class. In 1/10-scale on-road oval racing, you might try stock motors with five sub-C cells and 3/4-inch-wide tires. I plan to experiment with this, and will pass on the results. Watch for 1/10-scale Classic Coupes in the future.

Until next time, try to keep it shiny side up!

The Merkur XR4Ti GTU body is
deadly looking and handles well.
Car is deceptively fast on the track.



BOLINK

ELIMINATOR

by MIKE LEE

ONE OF THE FASTEST-GROWING segments of model racing is $\frac{1}{10}$ -scale road racing. There's nothing like the rush of speed and acceleration from a road car as it punches down a straight. It puts the feeling of speed and power back into the hands of the driver.

One of the pioneers in the $\frac{1}{10}$ -scale road racing scene is BoLINK R/C Cars, Inc.* Way back in 1979, BoLINK had one of the first road cars for this size category—the Digger 10. This car wasn't really a road car, rather, it was a road car adapted to run off-road. For a car between the then-blossoming $\frac{1}{12}$ -scale and the established $\frac{1}{8}$ -killer cars, the Digger did a pretty good job of handling the paved raceway.

BoLINK has returned to the $\frac{1}{10}$ scene with the Eliminator 10, an all-new chassis design for the road-racing circuit. The Eliminator 10 is the larger version of the Eliminator 12, and both were designed to be top-notch competitive cars for the serious racer. Both versions have single pan-type chassis designs with full-floating rear suspension and both use 6-cell saddle packs. The similarities end here. The Eliminator 10 has a rear suspension pod that's dampened with two oil-filled shocks, a cast-aluminum motor mount that's integrated with the axle mounts, and a fiberglass front end with adjustable caster. It's also very lightweight.

Like all road cars, the Eliminator 10 is easier to assemble than its off-road counterparts. The front-axle plate is attached

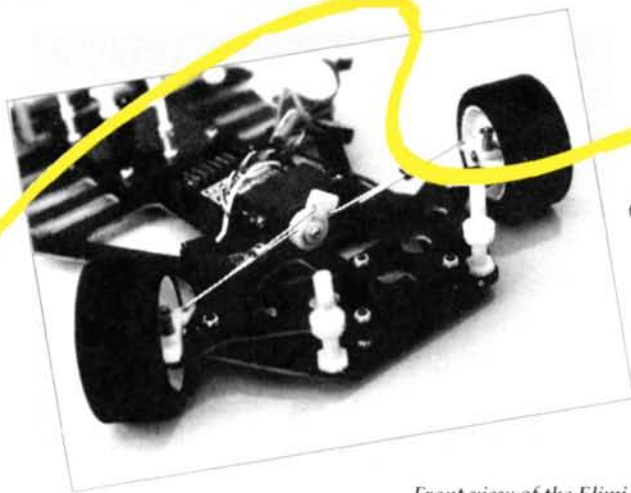
(Continued on page 92)

FOR 10



DIAL "S" FOR
SPEED

Photos by Mike Lee.



Front view of the Eliminator shows the locking nuts used to adjust the caster of the front end.

BOLINK ELIMINATOR 10

Type On-road
Scale 1/10
Sug. Retail Price \$199.95

DIMENSIONS:

Overall Length 19 inches w/body
Width 9 inches w/body
Height 4 1/4 inches w/body
Wheelbase 10 1/4 inches
Front Track 8 3/4 inches
Rear Track 8 3/4 inches

WEIGHT:

Gross (w/bat.) 42 ounces
Balance (f/r) 45/55

BODY:

Type Ford Merkur
Material Lexan

CHASSIS:

Type Plate (pan)
Material Fiberglass

DRIVE TRAIN:

Type Spur gear
Differential(s) Ball

SUSPENSION:

Front: Type King-pin
Dampening Coil spring
Rear: Type T-plate
Dampening Twin oil shocks

WHEELS:

Front: Type One-piece nylon
Dimensions (D/W) 1 1/4 x 1 3/4 inches
Rear: Type One-piece nylon
Dimensions (D/W) 1 1/2 x 1 3/4 inches

TIRES:

Front Foam
Rear Foam

ELECTRICAL:

Motor BolINK stock
Battery Required 6- to 7-cell saddle pack

OPTIONS AS TESTED:

KO Propo EX-7 radio, CX-II electronic speed controller, graphite rear axle, aluminum hubs.

COMMENTS:

Easily assembled car that's simple, yet fiercely competitive. No special skills to assemble or drive. This car renders excellent performance for the price. Would like to have a rear wing included.

(Continued from page 89)

to the main chassis plate. The front-axle assembly is rubber-mounted to the main chassis to allow for some suspension action, and also to permit caster adjustment. Caster adjustment requires only a shift in the mounting bolt position.

Stub axles are then pressed into the steering blocks and mounted to the chassis via a large, polished kingpin. Each axle has a small spring on the kingpin to provide the spring suspension action of the front wheels. There isn't much movement up front but you won't be jumping off of stadium jumps with a road car.

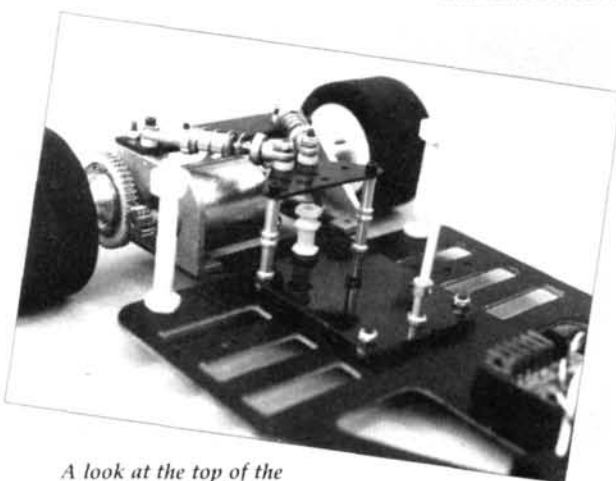
The rear-end assembly starts with the radio tray, which is a simple fiberglass plate. (There are no holes for the radio because it will be held in place with double-sided tape.)

The tray is mounted to the T-plate of the rear suspension, then both are mounted to the chassis as a unit. Make sure that when the unit is mounted, it moves fairly freely, as this is the key to a good rear suspension.

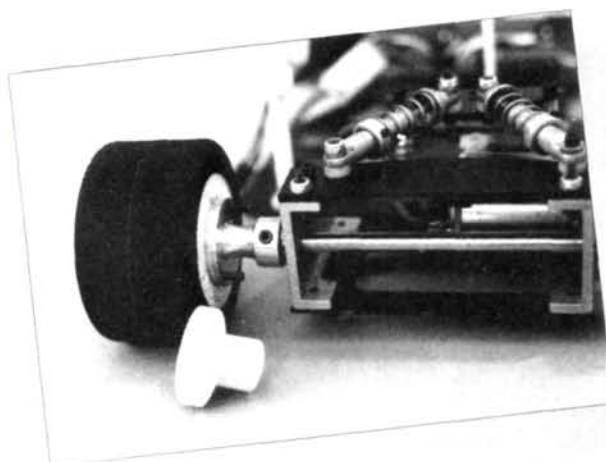
The rear-end assembly is an aluminum part mounted to the top of the T-plate. In this unit, place the bearings, rear axle, and the rear-suspension components. A top shock mounting plate finishes off the top of the rear end. Attach the shocks and move onward.

The radio installation is next, and this is one of the easiest radio installations you'll ever perform.

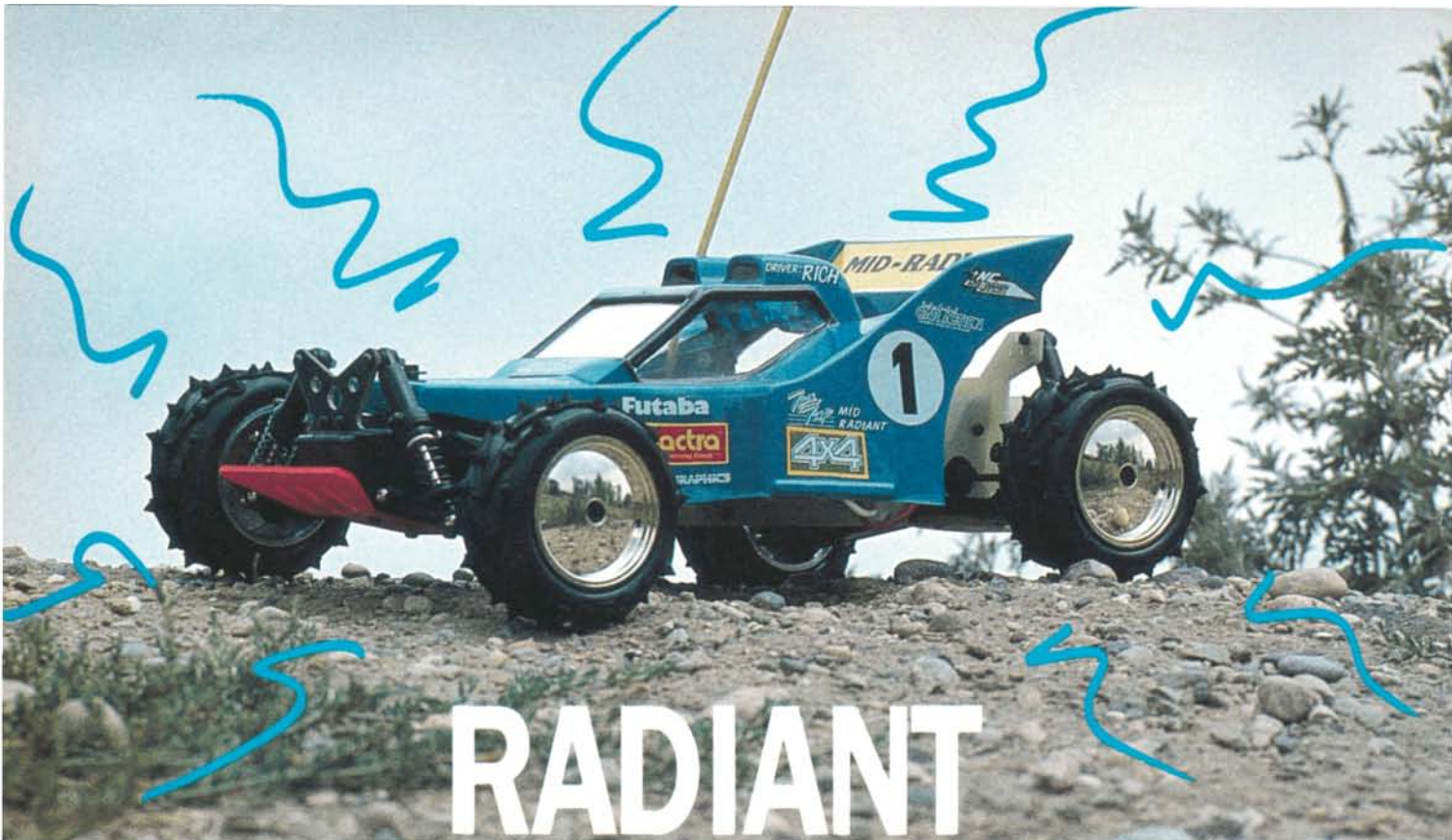
(Continued on page 143)



A look at the top of the main chassis. This area has loads of room for the radio and batteries; even standard-size radio components fit easily.



Aluminum wheel hubs were used because the supplied set of nylon units were out-of-round and degraded handling.



RADIANT MID-CONVERSION

**YOU DON'T NEED A NEW CAR
TO GET MID-MOTOR PERFORMANCE.**

by TAI SUGAHARA

VIRTUALLY ALL OF THE NEW 4WD off-road cars feature a mid-engine design. Now, Race Prep* offers a conversion kit for the AYK Radiant. Race Prep has been importing the rear-motor Radiant for a couple of years now. The standard Radiant uses a beam-type chassis with aluminum side plates and the rear engine drives a pair of ball differentials with two chains. The first chain connects the spur gears to the rear differential and a long chain is then used to connect the front and rear diffs.

Race Prep's USA Edition Radiant includes one of their hot stock motors and four ball bearings. A new set of steel washers is also included to upgrade the differentials. This mid-engine conversion kit has new fiberglass side plates for the chassis. An idler gear assembly is installed to raise the chain over the top of the motor and a new radio/battery tray is also included. All of the necessary screws and hardware are in the kit.

The kit does have a couple of problems. The instructions are very poorly written and incomplete, making it difficult for the beginner. In addition, the new radio tray is much too small. It's difficult to install an electronic speed control on one wing

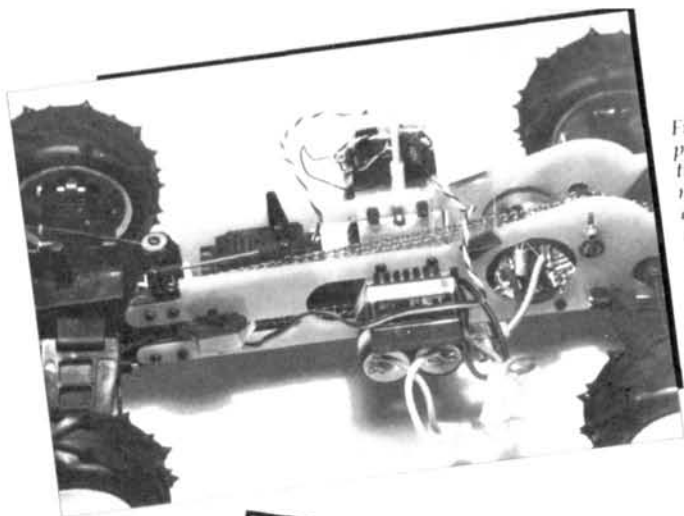
of the tray and still leave room to secure the battery pack. Only a mini-receiver can be used on the opposite side. I used a Futaba* MC-9 speed controller and R2H receiver on the Radiant-Mid. Securing the body to the chassis poses another problem: There isn't a suitable location for installing a rear body post.

A Futaba S-28 servo was mounted up front for steering. It's a tight fit, but the servo can be placed inside the frame rails and held down with strapping tape and servo tape.

While the two ball differentials are adjustable, they also have the roughest action I've ever seen. Even with the new washers, the performance of these units was unacceptable. After going through the process of re-assembling the diffs a couple of times, I decided to lock the rear diff and live with the front one. A possible solution might be to replace the stock thrust bearings with Parma* bearings, which hold the balls in place with a cage.

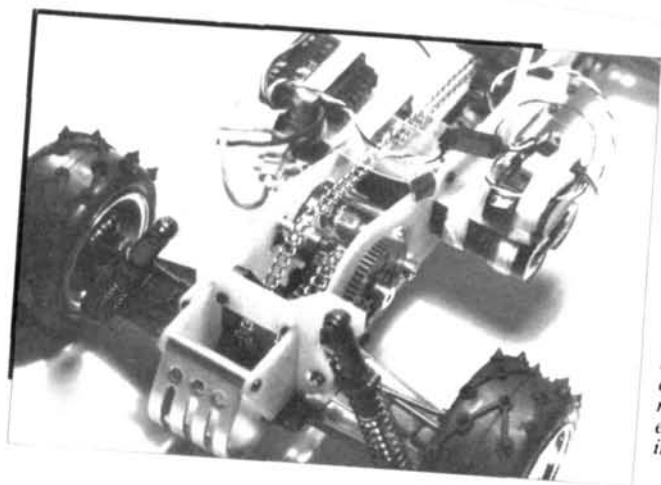
The rear shocks are mounted behind the rear suspension arms in the conversion. The back edges of the suspension arms will have to be trimmed to allow for free movement.

A new Dymond* No. 1 motor was installed for some high-speed flying. This motor is best suited for wide-open tracks. I



Fiberglass side plates replace the stock aluminum ones, and also relocate motor to mid-position. Mounting the radio gear to this new chassis configuration was difficult.

It's easy to see the redistribution of weight on the completed Radiant Conversion with the body removed.



The two-chain drive is simple and gets the horsepower to the wheels efficiently. Unfortunately, the differentials need improvement.

charged up a 6-cell battery pack, using a NorCal Avionics* Accu-Charger I. This charger does an excellent job of peaking your pack automatically.

The Radiant-Mid is quick off the line. The car is easy to drive, even with the differential problems. The dirt flying all over the place makes 4WD cars exciting to drive. The suspension works well with oil-filled coil shocks on each corner of the chassis. With the addition of a full set of ball bearings, the Race Prep Radiant-Mid could become truly competitive in the 4WD field. If you have a Radiant, you'll want to check out the Race Prep mid-engine conversion kit.

*Here are the addresses of the companies mentioned in this article:

Race Prep, 20115 Nordhoff St., Chatsworth, CA 91311.

Futaba, 555 West Victoria St., Compton, CA 90220.

Parma International, 13927 Progress Parkway, N. Royalton, OH 44133.

Dymond; distributed by UMP, 301 Holbrook Dr., Wheeling, IL 60090.

NorCal Avionics, 5689 Glasgow Rd., Troy, MI 48098.

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BOOMERANG

(Continued from page 60)

can see here:

- Lap times: oval course—10-second average; road course—20-second average.

- Top speeds: with RS540 motor—14.5mph; with Trinity motor—17.8mph.

Now we're cooking! The Boomerang is now competitive with any other car on the track. In fact, these lap times reflect only the average times. There were quite a few laps where another full second was cut off in both oval and road courses. Because of the brakes, the car could go much deeper into the turns before backing off, and the bearings allowed for precise wheel control without wobble, leaving more time to concentrate on driving the course and not the car. The handling got just a hair better, as the higher speeds allowed us to loft the front end a bit more on the jumps, resulting in a totally flat landing.

Of course, this wasn't a real test, because we weren't racing against a track full of cars. OK, I can fix that; to see how the Boomer does in the heat of racing, our driver, Stacie Conway, took the Boomerang to the races.

The event was oval racing with off-road cars, not dirt-oval conversions like the Dominator. The Boomerang proved it could stay with the tough guys; no sweat! Entered in the 2WD class, Stacie piloted the only 4WD car in the class and consistently finished in the top three in every race. Now that's performance!

Our project has proven to be a worthwhile effort for the budget racer. Not only have we made our Boomerang completely competitive with the others, but we've increased its reliability and life with just a few minor changes. Some of these changes will be necessary anyway, and they're not expensive. Whether you're serious about hitting the race tracks, or you just want to get the most from your car, you can do it right and do it cheap. The Budget Racer Boomerang is a winner!

**Here are the addresses of the companies mentioned in this article:*

MRC/Tamiya, 2500 Woodbridge Ave., Edison, NJ 08817.

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Aerotrend, 31 Nichols St., Ansonia, CT 06401.

Trinity, 1901 E. Linden Ave. #20, Linden, NJ 07036.

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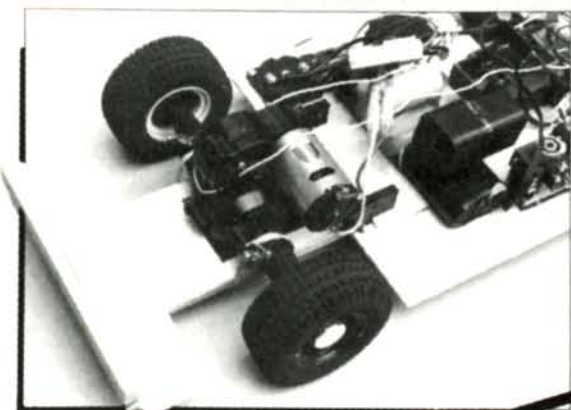
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PULL OVER

This guy may be watching for illegal tactics at the next local race.

by ERIC GOLDSCHRAFE



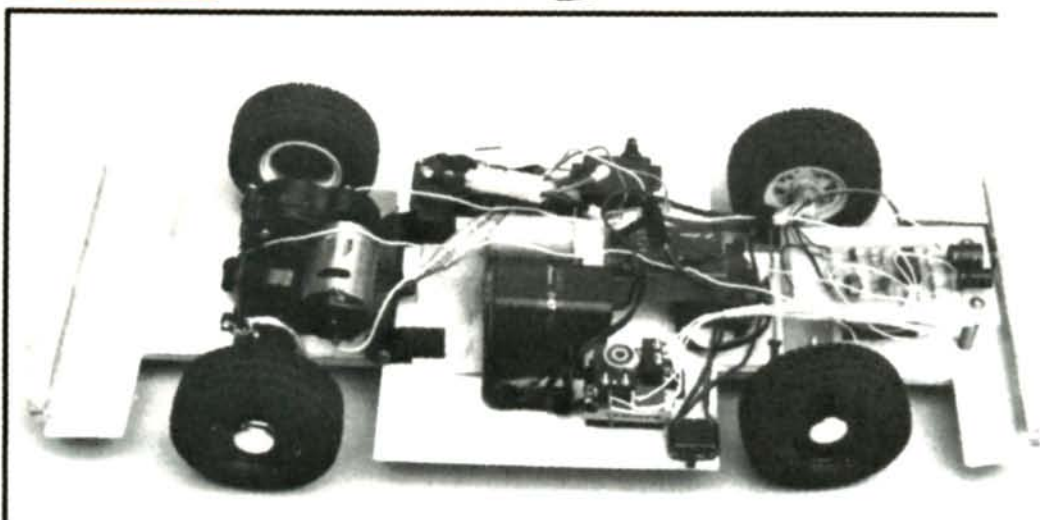
A complete Hornet rear end is used. Hornet swivel mounts are screwed to plywood. Note rubber bands for suspension.

IN MY QUEST FOR THE unusual or radical, some strange projects surface on my sketch pad, and this one is no exception. It looks like a very complicated undertaking, but it's really as simple as "black and white." It's not just a paint job; underneath that easily identifiable body are a few rather unorthodox devices that add a lot of class to this neat ride.

Before I pop the hood on this beast, let's take a good look at the Lexan body shell: The black-and-white paint scheme with chrome trim, bumpers, and lettering pretty well camouflages the fact that it started out as a Parma* '83 Monte Carlo stock car. If it wasn't for the spoiler, you'd never guess its lineage. The trim is MonoKote*, and the lettering comes from Coverite Graphics* sheets. The "Arcee County Police" emblems are copy-machine duplicates of a hand-made master, highlighted with magic markers, sprayed with a few coats of clear polyurethane, and applied to the doors with double-sided tape. More external

7

Wide chassis still needed
second deck in front for
siren speaker.



detail could be added, including a radar unit, a loudspeaker setup on the roof, and a couple of antenna mounts. By the way, the dog-dish hubcaps are Testor's* paint-jar caps that have had the paint stripped off with lacquer thinner to expose the metal, which was then polished. They're stuck to the wheels with a dab of silicone adhesive.

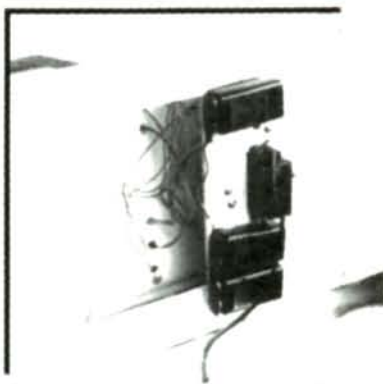
The roof-mounted light bar is a piece of Lucite stock with Testor's blue candy-color paint to tint it. Holes are drilled along the bottom for the strobe-light bulbs and mounting screws. Three Strobe-F-Light* flasher units are mounted to an interior tray, along with three separate 9V batteries. Three batteries are necessary, because with only one battery, the minimal amperage can cause the flasher units to "latch up" and all flash at once. Instead, a servo with a three-eared horn operates three micro-switches, energizing the separate circuits and providing the random-flashing ripple effect seen on full-size units. The Strobe-F-Light flashers are available in inexpensive kit form or come already assembled. Similar devices are also available from Robbe* and RAm*. The bar assembly could be built up from clear plastic sheet stock, or it could be easily vacuum-formed. From inside the roof, a screw on each end mounts the bar to the body with a couple of suitable spacers. To simplify lamp replacement, individual holes were cut through the roof, lining up with the holes in the bar. The grain-of-wheat bulbs are pressed into close-fitting holes, and this adequately holds them in place. MonoKote chrome trim was used to finish off the completed bar.

The servo that operates the flashers plugs into a 4-channel receiver so that the lights may be operated remotely. This could also be operated manually with a switch, if a 2-channel radio is used.

A look at this car with the body removed shows a chassis loaded with components. The full-width chassis was made from aircraft plywood with a couple of spruce stiffeners underneath. Unmodified Tamiya* Hornet front- and rear-end pieces were used so that they could eventually be returned to their original chassis. Despite the somewhat heavy car, the Hornet rear-end assembly provided plenty of speed and acceleration on a 7-cell pack. An "interceptor" motor could be added, but the intimidating appearance of this cruiser should keep those R/C street-rodders under control.

As I mentioned before, a 4-channel radio was used to operate this machine, and the steering and mechanical speed control are operated in the usual way,

(Continued on page 146)



Plywood plate attached to body holds servo, batteries and three micro-switches (not visible) for the light bar requirements.

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1/4-SCALE NATS (Continued from page 48)

ready for Sunday's Main events. First one up was the C-Main for Supermodifieds. Dean Brown took an early lead in the 40-lap event, but began to have rear traction problems. Spinning wildly, Brown lost the lead to J.D. South who knew he'd encounter the same problems if he pushed his car, so he drove very smoothly and conservatively until he lost part of his doormat-shod rear tire. Yes, I said doormat—the kind that we wipe our feet on. Racers, being all just a little "tipped over," will try *anything* to get traction! Before we went to a dry "blue-groove" track, recapping tires with strips of the rubber, pimpled doormat was necessary. J.D. South's mats worked well on the dry track until part of the mat came off. From there, all he could do was cruise, as severe tire shaking made the car impossible to drive at racing speeds. So Dean Brown regained the lead and Joe Rogers went into 2nd as South limped home in 3rd.

Next up was the B-Main Supermodified. Dean Brown had "bumped-up" and, as his racing partner, Dan Morrow, had told me, they were ready to win again and go to the A. Well, they almost did it. The B-Main was a full eight-car field, and that means *traffic*. The race itself was mainly between Gus Gustafson (who gets through traffic one way or another) and Tom Wilson. These two battled all 60 laps, with Gustafson working the back markers well, while Wilson kept driving out of the corners too fast, often spinning out. In fact, Wilson spun so much that Dean Brown came past him at the end for 2nd. So with Gustafson bumping to the A, Brown became the winner of the B with Wilson 2nd and Jim Wright 3rd.

Then it was time for the A-Mains. These races would determine the three new ROAR National Champions. The Supermodified Main was first. It was also the first race where the top three finishers would be torn apart to ensure that they were legal, and this changed the standings later that day.

As the eight cars took the pace laps, the crowd gathered to watch the best go at it for 100 laps. At the green flag, Mike White took command and held off challenges from Rick James, Gary Kyes and Mike Cox. White drove a smart race, cruising the corners and staying calm while lapping other cars. He did exactly what he had to do for the win, and nothing more. Mike Cox and Gary Kyes battled for 2nd for much of the first half of the race until Cox was hit by another car while spun out in turn 1. His car was broken and retired, but he'll be back and

(Continued on page 106)

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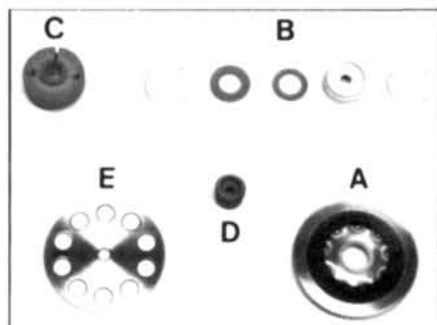
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1/4-SCALE NATS

(Continued from page 104)

will be a major force to be reckoned with.

With Cox out and James' car not handling the way it did in qualifying (Rick was low-point man—the best score—in the heats), Kyes was able to concentrate on catching White, and Gustafson was cruising around in 3rd. Once again, Gustafson had worked (or was that worked-over?) the traffic to his advantage. The race ended with White in 1st, Kyes in 2nd, Gustafson in 3rd and James in 4th. However, this was changed after tear-downs, when Kyes fell victim to a technicality in the rules and was subsequently disqualified.

Next up were the Sprint Cars. These very realistic cars were the fastest cars competing at the Nationals, and they provided an excellent show. Their race was only 30 laps, and that's how they wanted it—short and sweet. This race was largely uneventful, but watching these rockets fly around the track was thrilling. George Brazil took the lead early and was *gone*. His car was glued down in the corners and could practically run the full course wide open. During the race, Brazil was timed in the mid 8-second range. Our track is almost 440 feet around, so that's *flying*! All Joe Alves and Gary Kyes could do was to hope that Brazil's car would break, because there was no catching him. But, unfortunately, Brazil's fantastic driving was all for nothing, as he too was later found to be in violation of the rules and disqualified. That moved Alves up to 1st, Kyes to 2nd and Ross Kloeber to 3rd.

The final race of the day was the Grand National Stock Car A-Main. Only seven drivers risked putting their full-bodied cars on the dirt oval this year, but this race was as good as any I've seen. I crashed out early so that I could watch. (Sure!) Anyway, when the cars took the green flag, Jon Rahe captured the lead and kept his cool while the rest of the field muscled one another around for a while. Rick James had 2nd until he spun and was passed by Gary Kyes.

At the 50-lap mark, the cars were stopped and refueled for another 50 laps. Rahe, Kyes and James had the best cars, with James turning the fastest lap times. James would reach the same lap as Rahe and Kyes, only to spin while dodging slower cars. That left the battle for the lead to Rahe and Kyes, and Rahe had a comfortable margin and a no-problem win until his engine began vapor-locking and slowing. James made it by to get on

(Continued on page 108)

1/4-SCALE NATS

(Continued from page 106)

the lead lap for good, and Kyes passed Rahe for the lead with about three laps to go. There were no changes in the results of this, as all the cars were found to be legal.

Speaking of legal cars, I've been to major races where rules have been ignored and to races where they've been enforced, and although tech inspection is sometimes tedious, it really benefits all racers. It makes for better racing when everyone is running a legal car without any unfair advantages. The Outlaw crew did an excellent job; we had rules to go by, and we did just that.

It was a great weekend of racing. We were happy to see the sprint cars hook up so well on the track, and the fans loved

the stock cars, so we think this class will become more popular with time. Maybe at next year's Spring Nationals the stock cars will outnumber the supermodifieds. Watch for our giant Fall Classic for 1/10-Scale Dirt Oval cars in October '88.

*You can find Outlaw R/C Hobbies at 7920 Webster, Highland, CA 92346. ■

NITRO BRUTE

(Continued from page 71)

with the curbs on my block, the truck bounced off and was ready for another encounter.

The Nitro Brute requires good-quality 10-15 percent nitro fuel, a glow-plug cord and a 1.2V battery. To start the motor, a pull cord is provided that attaches to a pulley device mounted on

the engine shaft in the rear of the car. But after a few pulls and some calluses, you might want to buy an inexpensive electrical starter that is applied to the cone-shaped end of the pulley and rotates the motor by friction. Remember, all gas motors need three to four full tanks of fuel for proper break-in. During break-in, run the vehicle over smooth, level pavement at a wide range of speeds without overheating it. At first, the engine may seem sluggish: The carburetor may be running too rich and will require a needle-valve adjustment. (I use the sound of the engine as a guide: Higher pitch usually means higher rpm.) I've found that the O.S. series runs extremely well on a lower percentage of nitro—about 10-percent nitro usually provides good top end.

After my initial break-in period was completed and the truck seemed to be dialed-in, it was time for some real fun. What better way to test the durability of the Nitro Brute than at a local construction site where the ground was muddy and soft? I topped off the tank with a fresh brew of 10-percent nitro, cranked the electric starter and disconnected the glow-plug cord. Unlike its electric-motored counterparts, the Nitro Brute was extremely fast. I had a great time watching the truck flinging mud and water as it powered its way through the field. The sounds and the smoke spewed out by the screaming O.S. powerhouse were impressive. As I gained confidence, I began to test its ability by setting up jumps and landings. But, as previously mentioned, the rear stock springs couldn't properly support the rear weight and made the rear end ride too low. This problem was compounded by any attempt to land flat-footed after a jump. The Nitro Brute's rear end bottomed out and the toe-in adjustment ball ends snapped out of

(Continued on page 110)

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NITRO BRUTE

(Continued from page 108)

place. I temporarily solved the problem by placing tie wraps around the shock shaft, thereby stiffening the rear springs.

I decided to avoid jumping for the rest of the day, but I did devise some good alternative tests that are worth mentioning. Though I didn't have an official truck-pull sled on hand, I did use some heavy debris at the construction site to provide a mock sled pull. I tied a long 2x4 wooden stud to the back of the truck with some strong rope, and, on the count of

three, the truck pulled the wood about 25 feet without hesitation. I increased the load, piece by piece, but at about 50 pounds the truck simply stalled.

The Nitro Brute is one of the more exciting R/C models I've tested to date. The main advantages of gas-powered over electric models are increased speed and a longer running time. (Plus, it's easier to top-off the tank than to recharge a battery after each run.) The main disadvantage is noise: Sometimes it's difficult to find an R/C track that allows

gas-powered vehicles. But if you're in the market for some high-speed, high-powered monster-truck fun that you can't get with electrics, the Nitro Brute is the one to buy.

**Here is the address of the company mentioned in this article:*

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RC10 TECH

(Continued from page 73)

and the pin on the dogbone will be on the edge of the slot on the stub axle. If some action isn't taken, the dogbone will slip out of the stub axle, possibly chipping the stub axle and bending the dogbone. A simple solution is to limit the shock-shaft travel with an 1/8-inch inside-diameter tubing, 1/4-inch long.

• **Anti-Roll Bars:** Parma* makes an excellent replacement anti-roll bar kit for the RC10 (No. 1730). The action of anti-roll bars maintains optimum traction by using the force on one wheel to lift the other wheel that is attached to the anti-roll bar. Oval racers will use the anti-roll bar system, while the off-road racers will leave them off. For oval racers, the anti-roll bars will add stability in the turns by helping to keep the wheels on the track. For the off-road racers, the anti-roll bar system adds spring to the suspension system. The front anti-roll bar in the Parma kit is too wide for our modified front end. To correct this problem, use the wire provided in the RC10 kit and form it 1/4-inch narrower than the Parma-provided anti-roll bar. This will allow the bar to

clear its mounting blocks, but it won't get caught in the springs of the front shocks.

• **Servo-Saver On The Steering Servo:** In the last article, we presented the Team

Losi Steering Bell Cranks. Since these bell cranks eliminated the stock servo-saver, you'll need to put a servo-saver on the steering servo. We used a Kim-



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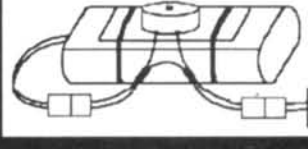
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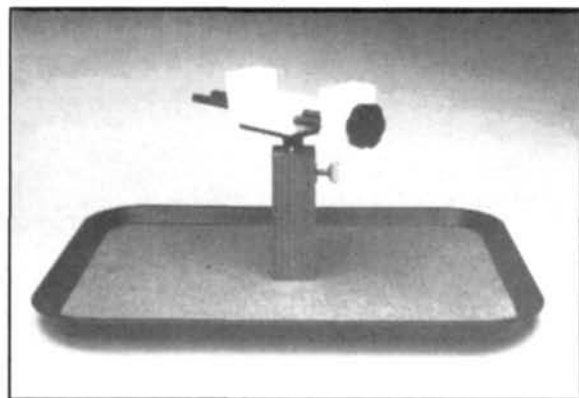
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RC10 TECH

brough* Servo Gear Saver (No. 114) and Kraft* servos. For your servos, you'll need to know your servo manufacturer and model when purchasing (e.g. Futaba, KO, Airtronics).

• Tires: The Pro Line* Knobby front tires (No. 1018) provided the bite we liked in cornering and they maximized the advantage of the "Texas Lean" front-end. For the rear, we used the Tamiya* Holiday Buggy tires (No. 1153), which absorb the shock from jumps better than any of the other tires we've used. They'll mount on the Associated* rear wheels but you'll need to cut out the ridge on the inside of the tire with an X-Acto knife. Many racers are using the Tamiya Falcon rear tires (No. 5288), which require adapters like those from Team Pit Stop* (No. 9001). When racing on asphalt or concrete, we used BoLINK* sponge tires because the grooved tires for both the front (No. 3052) and rear (No. 3314) seemed to provide better traction in the turns.

• Electronic Speed Controller: Our goal of 56 ounces was reached by using an electronic speed controller which saved over four ounces. When selecting an electronic speed controller, talk to the

(Continued on page 118)

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RC10 TECH

(Continued on page 116)

dealer about the construction of the unit. The first question to ask is whether the speed controller has relays. If it does, our suggestion is to look at another speed controller. Our experience has been that after a few crashes, the relays stick or stop working altogether. The second question to ask is whether the speed controller has a BEC (battery eliminator circuit). It's a plus if it does, because you won't have to buy a BEC to power your receiver and servo. We use Tekin's* speed controller, which has proven to be a solid performer and hasn't needed any repairs. Tekin speed controllers run hotter than most other speed controllers, but the motor runs cooler. Heat breaks down the strength of the magnetic field of the permanent

magnets in the motor; in other words, a cooler-running motor runs stronger, longer. We used the Tekin PRO (No. ESC190) because of its superb low-end performance. The speed controller is mounted on the rear shock tower so it receives good airflow for cooling. Since this speed controller runs hotter than most, always use heat sinks (No. HS1300), but be careful not to allow the two portions of the heat sink to make contact, as this could short out the speed controller.

• **Chassis Modification:** The modifications and the lighter hardware should have brought the weight of the RC10 down to 56 ounces with a 6-cell battery; the old ROAR minimum weight. For those using a heavy-duty steering servo or

7-cell batteries, you'll be one or two ounces heavier. To reduce this weight, lower the aluminum tub by 1/4-inch on the sides. For this modification, draw a line 1/4-inch below the top of the tub on each side. Draw a line from each end of the line on the side, tapering towards the top. Cut, using a carbide cutting wheel on a Dremel Moto-tool. This modification will reduce the weight without affecting the tub's structural strength and it will put you close to the 52-ounce goal—the new ROAR minimum weight for 2WD.

• **Battery Location and Wiring:** To aid in the weight symmetry of the car, relocate the battery front-to-back, instead of side-to-side as shown in step No. 187. Use the rear bulkhead servo cut-out as the rear battery holder and locate the front battery holder near the center of the car. Using a 3/16-inch drill bit, drill the mounting hole and countersink with a 3/8-inch drill bit. Cut the bottom out of the front battery holder and cut off the side walls just in front of the screw mounts.

One of the most important things you can do as a builder of a reliable race car is to organize the wiring; this means not using any more wire than is required, bundling it and securing it so it's not flopping around or shifting from side to side. To do this, you'll need Tie Wraps like those from Team Pit Stop (No. 8000).

For maximum protection, we placed our radio in the tub. If you do this, don't let the receiver or the antenna wire touch the aluminum tub; the tub is metal and will act as an antenna, causing interference with your receiver. We used Velcro to secure our receiver to the floor of the tub, and placed it about 1/8-inch from the side wall to avoid all contact with the tub. *Do not cut the antenna wire: The receiver is*

(Continued on page 132)

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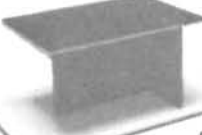
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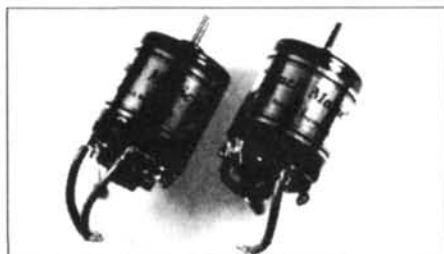
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RC10 TECH

(Continued from page 118)

tuned with the antenna wire of a specific resistance. Since no two wires are exactly alike, you just can't replace the antenna wire with another three feet of wire.

Coiling antenna wire when it's too long creates another problem, because the wire tends to increase interference. *Do not* coil the wire; wrap it loosely around a piece of scrap plastic and use servo tape

to hold it in place.

Use a battery eliminator circuit (BEC) to power your receiver and servos. Most electronic speed controllers have a BEC, as do most of the new receivers. If your speed controller or receiver doesn't have one, Tamiya makes a good BEC (No. 5250).

We used the Tamiya battery connectors for all our power connections (e.g., speed controller to battery and speed controller to motor). This is more of a convenience than a recommendation. If ours should fail, there are more Tamiya-type chargers available at the races than Associated-type chargers.

• **Bodies and Body Mounting:** The last place you can affect the weight of the car is in your choice of bodies. We chose RC Performance Specialties' Mirage body. This body is half the weight of the stock RC10 body and it has excellent aerodynamics. Mounting studs were eliminated by using Velcro mounting tape. Place the Velcro on the sides of the tub and on the corresponding location on the body.

• **Front Bumpers and Nerf Wings:** Front bumpers protect the front steering system and steering servo. Nerf wings help to

(Continued on page 135)

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RC10 TECH

(Continued from page 132)

prevent flipping by preventing your opponents' rear wheels from interfering with your rear wheels. Each of these options add weight, so evaluate your needs carefully and choose the protection you need. We used the front bumper (No. 3030) from Custom Racing Products*.

• **Keeping the Dirt Out:** Dirt is the number-one enemy of your transmission and motor. An RCPS motor-mounting gasket (No. 045) and a foam motor cover (No. 015) will help keep dirt out of the motor. In step No. 99, servo tape is used to protect this bearing. Another alternative is to use the top from a medicine dropper, and cut it to fit. We've tried various after-market dust covers but none seems to work as well as the stock cover. In order to adjust the diff without having to remove the dust cover, drill a 1/2-inch hole in the dust cover and use a plug from an old dust cover or one of the plugs from a replacement set of motor brushes.

• **Motors and Gearing:** The Team Losi Superstock motor (No. 6060) powered our new creation. Kimbrough spur gears were used for their smoothness and Parma aluminum pinions for their weight. For ovals with straightaways of 100 feet or more, we use a 50-tooth spur gear with 15-tooth pinion. On smaller ovals, we switch to a 52-tooth spur gear with a 14-tooth pinion, and for off-roads, we opt for stock gearing—54-tooth spur gear with a 14-tooth pinion.

We hope you've had as much fun with these articles as we did writing them. The RC10 was designed to be experimented with. Try some variations of your own, e.g., move the rear wheels forward one-half of an inch.

We would like to take this opportunity to thank Joe, Brad and Coe of R/C Cars Etc. in Garland, TX, along with Steve Miniea, Cliff Lett, and Kevin Orton for their help in answering our questions. Till next time, good racing!

*Here are the addresses of the companies mentioned in this article:

Dremel Mfg. Co., Racine, WI 53401.

Parma International Inc., 13927 Progress Pkwy., North Royalton, OH 44133.

RPS Distributing (Team Losi), 1655 East Mission Blvd., Pomona, CA 92705.

Kimbrough Products, 1430 East St. Andrews Place Unit E, Santa Ana, CA 92705.

Pro Line, 16466 Bernado Center Dr., Ste. 190, San Diego, CA 92128.

Model Rectifier Corp. (Tamiya), 2500 Woodbridge Ave., Edison, NJ 08817.

Associated Electrics, Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

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(Continued on page 143)



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RCIO TECH

(Continued from page 135)

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Tekin, 2411 S. El Camino Real, San Clemente, CA 92672.

RC Performance Specialties, 18312 Gifford St., Fountain Valley, CA 92708.

Custom Racing Products, 3250 El Camino Real B-3, Atascadero, CA 93422. ■

WEST COAST NATS

(Continued from page 83)

RESULTS

Supermodified A-Main

Position	Name	Chassis
1	Chris Rahe	RACO
2	Ralph Burch, Jr. (TQ)	WCM
3	Dale Smith	WCM
4	Mike White	RACO
5	Steve Ballew	RACO
6	Larry Peterson	RACO
7	Neil Schindler	WCM
DNF	John Rahe	RACO
DNF	Todd Bishop	RACO
DNF	Chuck Bunch	RACO

Sprint A-Main

Position	Name	Chassis
1	Ralph Burch, Jr.	WCM
2	Gary Kyes (TQ)	Alves
3	Steve Skellenger	WCM
4	Jim Brophy	WCM
5	Jheri Brickett	Alves
6	Ross Kloeber	Alves
7	Joe Alves	Alves
8	John Doud	Alves
DNF	Lance Love	WCM
DNF	Brendy Drifess	EDEL

Grand National A-Main

Position	Name	Chassis
1	Chris Rahe (TQ)	RACO
2	Gary Kyes	RACO
3	Dale Smith	WCM
4	Erik Soderquist	WCM
5	Mike White	RACO
6	Ralph Burch, Jr.	WCM
7	Don Storey	RACO
8	Larry Bles	WCM
DNF	Jon Rahe	RACO
DISQ	Russ Kloeber	WCM

ELIMINATOR

(Continued from page 92)

Basically, a steering servo is mounted up front with double-sided tape, with the receiver on the top of the radio tray, and the throttle servo right between them both. There's lots of room, so don't worry about having a mini radio to run this car.

I used KO Propo's EX-5 pistol-grip radio, available from Hobby Shack*. This unique radio features two channels with end-point adjustment, reversing, dual-rate steering and a "panic switch." The panic switch allows you to pull the

throttle trigger all the way to full power and to keep the actual throttle position in neutral until the switch is released—makes for good hole shots at the beginning of a race!

The EX-5 was complemented by the addition of a KO CX-II electronic speed controller, a miniature speed controller capable of 6- and 7-cell operation with 70amp constant power loading. I used the CX-II because I enjoy the instant response of an electronic controller, and because there are no moving parts. The supplied



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GREAT PLANS

ELIMINATOR

speed controller is a multi-band resistor type with wiper controller. There's nothing wrong with this type of controller, as it will give a smooth response and provide braking action when desired. In fact, I prefer this type of mechanical speed controller over any other. But when I can afford the luxury of an electronic controller, I go for it.

The motor supplied with the Eliminator 10 is a stock BoLINK unit for road use. Typically, I've found that the off-road motor (with its higher torque for dirt digging) works well with 1/10-scale road racing; you can gear up and still have lots of punch out of the turns. Standard stock road-racing motors lack this punch, but have a higher top end. I prefer the punch.

The road-handling is taken care of by a set of BoLINK's own wheels and rubber. Medium-traction, low-profile foam tires are mounted to solid-hub wheels of light nylon. Like most foams, you have to dress them a bit before racing. I used oil of wintergreen, and the bite I got was perfect.

All six batteries are mounted in a saddle-type arrangement, with three cells on each side of the chassis. BoLINK thoughtfully arranged for the driver to have several packs ready by having the

batteries pre-mounted to a battery mount block. This is a simple, plastic battery holder that you affix to the battery with instant glue. Once all three cells are glued to the holder (or to each other), the pack can be mounted to the chassis with two screws, and you're done! No tape or cable ties to mess with.

At the rear axle is a ball differential that's fully adjustable and uses standard 32-pitch gears and six to eight balls for diff action. The axles have oilite-type bearings on them, and these are satisfactory as long as you keep them well oiled. BoLINK's ball bearings are optional; I sprang for them and for machined-aluminum wheel hubs on which to mount the tires instead of the standard plastic hubs. The aluminum units are a lot truer. I also traded the steel rear axle for a lighter graphite one.

The body posts are made from 1/4-20 nylon bolts mounted to the chassis. These are very lightweight and strong. No doubt they'll withstand a rollover. A fiberglass whip antenna finishes off the rolling chassis.

I fitted the BoLINK Merkur XR4Ti GTO body to the Eliminator 10 chassis. This is a low-profile body with a nice,

painted in the white, yellow and red of the MAC Tool Logo, with decals from BoLINK to add the finishing touch. In no time at all, I had a Concours-winning body.

The first time out, I found that the Eliminator 10 handled well. With a little tire dressing added, it handled well right off the bat. It isn't as nimble as its 1/12-scale cousins, but then this is a larger car. It appeared that the Eliminator moved slowly, but don't be deceived. It'll leave any off-road conversion in the dust—no sweat!

Because the car tends to push, handling in the corners leaves a bit of understeer. An adjustment to the dual rate from the transmitter cured this and made the understeer mild and quite predictable. Acceleration isn't quite the type you'll find with a drag-racing machine, but it's quite manageable; just put the hammer down and go.

The front-end adjustment is one of the jewels of the Eliminator. If you have to make an adjustment, the result is immediate and obvious—you can feel the change right away. Smaller cars require more experimentation (by way of process of elimination) to effect a handling change. The same is true for the rear-end

(Continued on page 146)

FEATURES:

- ADJUSTABLE, FRONT END CASTER, CAMBER AND TOE-IN
- LEFT OR RIGHT SIDE MOTOR LOCATION
- REAR AXLE HAS 3 POSITIONS
- UNBREAKABLE FRONT BUMPER
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The only beef I had was with the differential adjustment. The steel axle uses a 1/4-20 nylon nut on the axle for adjusting. The thread size is too coarse and makes the diff adjustment very sensitive. A little tweak this way and you lock up the diff; a bit the other way and you spin the diff to death. On the graphite axle, the thread size is changed to 8-32. This is more like it, and allows for finer tuning of the diff setting. While it's still a little sensitive, it's not nearly as bad as the steel axle.

Overall, the Eliminator is a wonderfully predictable car to drive and dials in very quickly. Its looks on the track are deceiving—it's much faster than you think. In fact, the only other car that's going to stay with the Eliminator is another competitive 1/10-scale road racer. If you want to give 1/10-scale on-road racing a try, consider the Eliminator 10. You'll get good results the first time, and your car won't have dirt in it or on it.

**Here are the addresses of the companies featured in this article:*

BoLINK R/C Cars, 420 Hosea Rd., Lawrenceville, GA 30245.

Hobby Shack, 18480 Bandilier Circle, Fountain Valley, CA 92728. ■

PULL OVER

(Continued from page 103)

with the left stick up-and-down function working the throttle, and the right stick side-to-side function working the steering. By moving the right stick down, the lights are energized. The side-to-side movement of the left stick actuates an electronic siren. This module was custom-made, and will produce a standard siren sound when right stick is applied, and the "whooper" sound when the control is moved to the left. A 2-inch speaker mounted between the front wheels makes plenty of noise, and is held in place with servo tape. The circuit board for the siren is mounted above it on screw-in stand-offs. I'm not going to go into the circuit design for this siren unit, but similar items are available from Robbe, RAm, and most electronics stores. A rewired Robbe boat speed control was used on top of a servo to actuate the siren, and it was driven by a separate 9V battery.

Tamiya Ford Ranger wheels (painted black) and tires add to the cop-car image and provide enough cushioning to absorb normal street-type bumps and holes. It's a neat and fairly simple project if you make the various parts and modules separately and add them together when they're all finished and tested. Don't be surprised if you get pulled over by a real policeman—he'll probably just want to check it out!

**Here are the addresses of the companies listed in this article:*

Parma International, Inc. 13927 Progress Pkwy., N. Royalton, OH 44133.

MonoKote; distributed by Top Flite Models, 2635 S. Wabash Ave., Chicago, IL 60616.

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Testor Corp., 620 Buckbee St., Rockford, IL 61108.

Strobe-F-Light, 8405 Ave. "N", Brooklyn, NY 11236.

Robbe Modelsport, 180 Township Line Rd., Belle Mead, NJ 08502.

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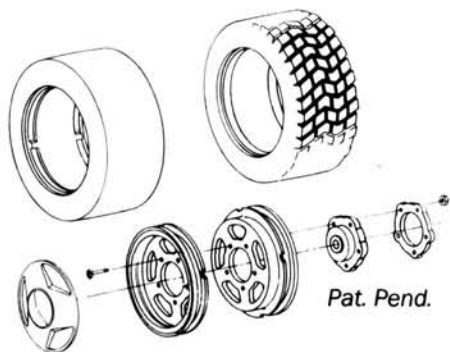
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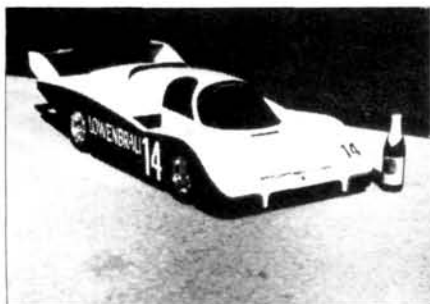
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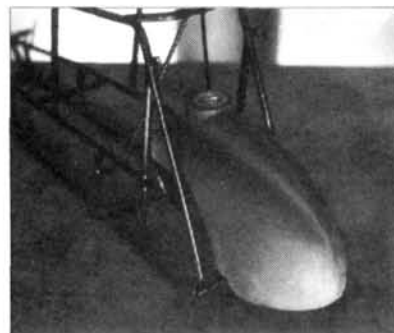
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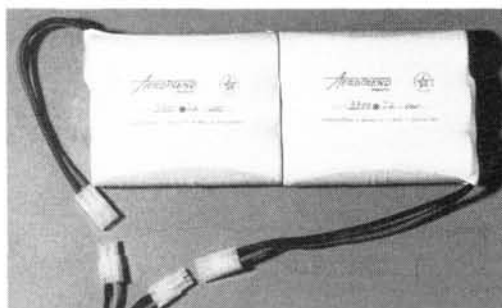
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(Continued on page 156)

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(Continued from page 154)

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(Continued on page 159)

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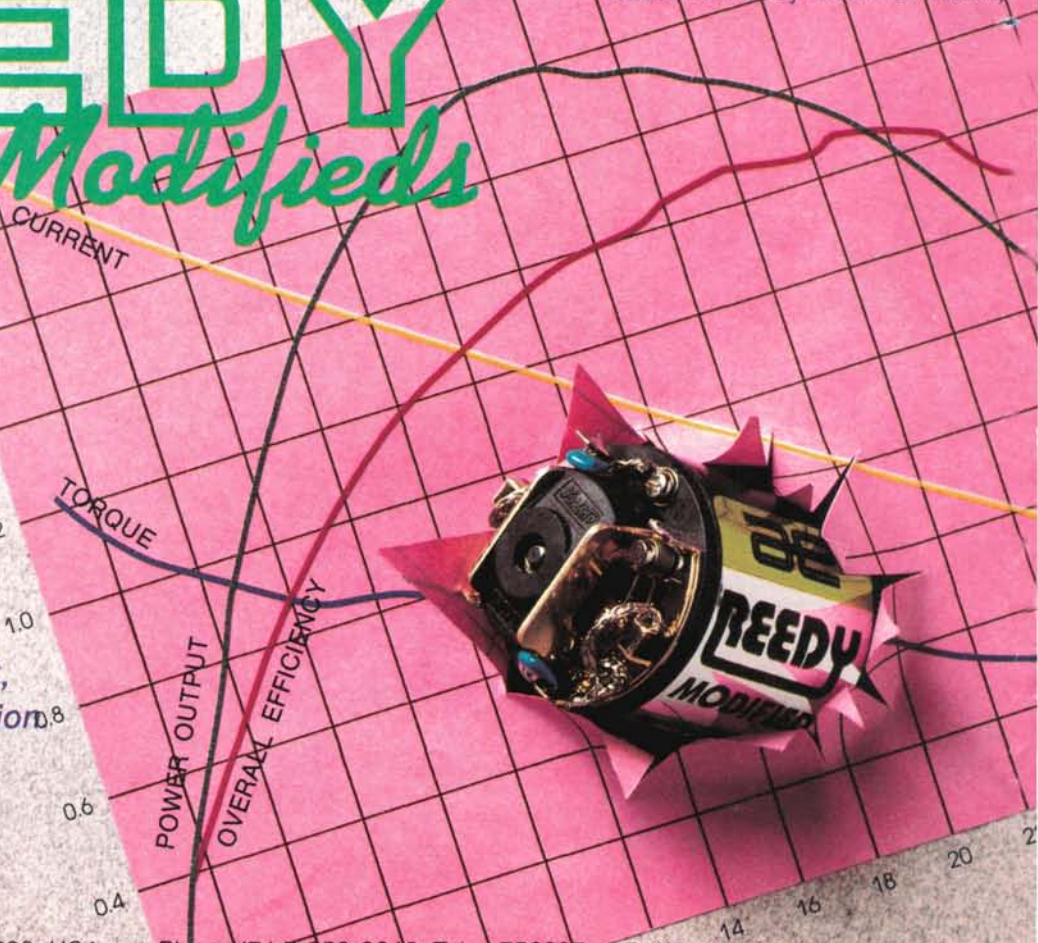
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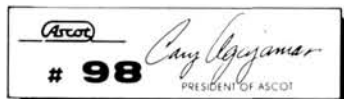
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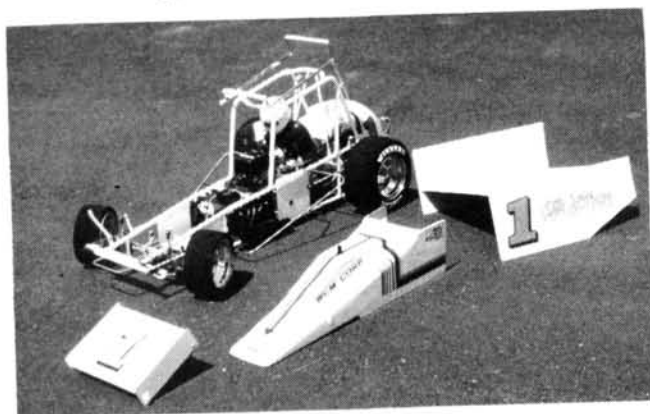
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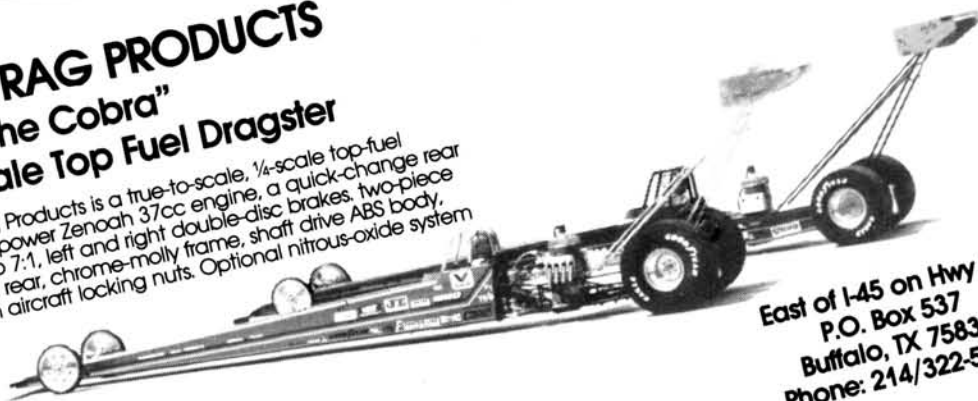
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AIRWAVES

(Continued from page 10)

Falcon Freak

After reading your magazine and other magazines, it's *completely* clear that yours is the *best*.

I have a Tamiya Falcon. Is there any way I can improve it for racing, as was done with the "Project Frog?" Would you please come up with a "Project Falcon" in a future issue?

Nick Pally
Crestwood, KY

Worth Every Penny

I think your magazine is the best! I'm not kidding—you write three times more stuff than the other magazine for 50¢ more. And now that it comes out every month, it's even more awesome!

Can you do more articles about the cheaper cars? A lot of us can't afford those rad, expensive models.

Also, please write an article about a totally modified Clod Buster (duels, modified motor, oil shocks, 4000mAh battery pack, ball bearings, etc.)

Mike Myers
Fargo, ND

Thanks for the votes of confidence, dudes. It's guys like you writing in with suggestions who help us bring the reader more of what he or she wants, so let's hear requests from even more of you. Nick, I realize that project cars can get very expensive; that's why we started the Budget Racer, and we're going to run a Budget Racer Project Car along with Dick Brinton's column. Some of the first cars to get the low-dollar once-over are going to be the Falcon, the Boomerang and the Raider.

As for your Project Buster request, Mike, as a result of your letter, Steve "Smitty" Pond has accepted the assignment. So look for "Project Buster" in the next few months. CC

Cruisin' for a Bruisin', Part I

RCCA, you have a great mag with one flaw. Here's my complaint; take one Tamiya Avante and one Tamiya Bruiser. The Bruiser has been around for years and you haven't done a Track Report on it (yet). The Avante has been out three months and you make such a big deal out of it.

(Continued on page 168)



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AIRWAVES

(Continued from page 166)

Get with it, RCCA; keep up the OK work.

DAVE ROMULS
Detroit, MI

Dave, the reason we made such a "big deal" out of the Avante is that it's Tamiya's biggest effort at building a competitive 4WD machine. As far as the Bruiser is concerned, we reviewed it in the Winter '85 issue, OK?

SP

Sleepy Clod

Your magazine is awesome! It really blows me away—especially the Hot Rod issue (June '88).



I have a Tamiya Clod Buster. I clocked it on my bike speedometer and it only did 5mph. When I read the Monster Truck Shootout (Yearbook) you said it went 10.20mph. How did you get yours to go so fast?

ROBERT HOENIE
Celina, OH

Robert, when we did the Monster Truck Shootout, a sophisticated timing system was used to determine the exact speed of each of the trucks. The Clod Buster we tested used a standard 6-cell flat pack with the power/economy switch in the "power" position; otherwise, the truck was completely stock. Two things that may have given you such poor results come to mind. First, if the truck hasn't been assembled with close attention to detail, there may be something causing excessive drag on the drive train, and this will slow it down. Second, it may simply be that the accuracy of your bicycle's speedometer is questionable. Our Clod Buster, and the rest of the trucks used in the Shootout, were all stock. The 10.20mph speed we recorded is representative of what all Clod Busters should be able to do out of the box without any "tricks."

SP

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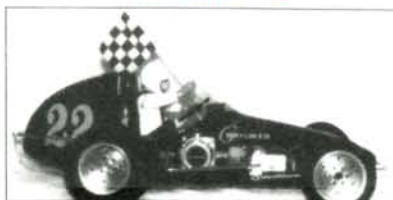
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